

Establishing Modified Mental Health Assertive Treatment Programs in a Developing Country

By

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DECLARATION

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I dedicate this work to my father, who would have derived
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Abbreviations

ACT	Assertive Community Treatment
WHO	World Health Organization
DIH	Days in Hospital
HFU	High Frequency Users
LFU	Low Frequency Users
PANSS	Positive and Negative Syndrome Scale
CATIE	Clinical Antipsychotic Trial of Intervention Effectiveness
QOL	Quality of Life
SOFAS	Social and Occupational Functioning Assessment Scale
PACT	Programme in Assertive Community Treatment
FOP	First Onset Psychosis
AMP	Assertive Monitoring Programme
CGI	Clinical Global Impression

Summary

An increasing demand for acute inpatient beds has put pressure on psychiatric services in the Western Cape Province of South Africa. While this is not unusual compared to elsewhere in the world, this project aims to find an assertive intervention that not only successfully reduces inpatient usage, but is also sustainable in a low-resource setting.

It also attempts to address the repercussions of the deinstitutionalization process, which include a rise in homelessness, an increase in “revolving door” (RD) patients, inadequate discharge planning and a reliance on poor community resources. RD patients also contribute markedly to the need for inpatient beds and costs associated with acute inpatient care, placing an additional burden on health care.

Interventions that reduce readmissions in high frequency users (HFUs) help decrease costs associated with inpatient care and improve bed availability. Assertive Community Treatment (ACT) refers to initiatives that incorporate capped caseloads, frequent contacts, home visits and pro-active follow-up.

Results from international studies show that ACT interventions may be effective in reducing readmission rates in HFUs in settings where standard care is less comprehensive.

The project was divided into four studies, each contributing to inform the final conclusion.

Study 1:

This was a randomized control trial, which compared a group of low frequency users (LFUs) of mental health services with a group of HFUs. The purpose was to ascertain if local HFUs shared the same characteristics as described in international literature, as we intended to modify a model that had been proven to be effective in an international sample of HFUs. Our results indicated that local HFUs had similar characteristics to those described in the literature; they were more likely to be young males, were more severely ill and more likely to use illicit substances.

Study 2:

In this study we assessed the effect of a modified intervention on inpatient usage, illness severity and social functioning by comparing intervention participants to a control group over a 12-month period. The intervention was a modified ACT service, with intervention patients receiving fortnightly contacts, pro-active follow-up and 50% of all visits at home. At 12-month follow-up, patients in the intervention group were significantly less ill, reported higher levels of functioning and had significantly less readmissions and overall days spent in hospital (DIH).

Study 3:

In this study we report on the effect the previously described, modified assertive intervention had on inpatient usage after 36 months. It is important to be able to demonstrate sustained outcomes, since outcomes may tail off after the first 12 months. We compared readmissions and DIH of the same intervention group, with the same control group from our previous study. In this study, we were able to

demonstrate that the positive outcomes we reported on in our 12-month follow-up study can be sustained over a 36 month period. The intervention group still had significantly less readmissions and DIH compared to the control group. Despite the success of ACT interventions locally, these highly specialized and focused interventions are expensive and possibly not justifiable in a low-income setting.

Study 4:

This study was conceptualized in an attempt to find a midway between a highly focused intervention “for few” and the less supportive standard care service which the majority of patients have access to. The intervention was a phone-based intervention, which aimed to support patients and families with frequent phone contacts and would facilitate the patients’ use of the existing standard care service. At 12 month follow-up, there was no difference in inpatient usage between the intervention and the control group. Use of illicit substances was high in both groups.

Conclusion

Assertive interventions are effective in reducing inpatient care in our local setting, even when modified to allow for larger caseloads and less frequent visits. However, once home-visits and frequency of contacts are excluded from the model, programme efficacy is reduced significantly. These findings are important in the development of future community-based mental health services, as they will be able to suggest the best possible structure of prospective programmes for better patient results and more efficient and cost-effective programme management.

Opsomming

Die toename in aanvraag vir akute binnepasiënt beddens plaas druk op psigiatrisse dienste in die Wes Kaap Provinsie van Suid-Afrika. Hoewel dit ooreenstem met internasionale tendense, poog hierdie projek om 'n pro-aktiewe intervensie te vind wat effektief is in die vermindering van binnepasiënt gebruik en ook finansieël volhoubaar is in 'n omgewing met beperkte hulpbronne.

Die projek beoog ook om die gevolge van die deinstitutionalisering proses aan te spreek. Hierdie sluit in, die toename in haweloosheid, die verskynsel van sogenaamde “draaideur” pasiënte, onvoldoende ontslag beplanning en beperkte gemeenskapsgebaseerde hulpbronne. Draaideur pasiënte dra betekenisvol by tot die druk op die aanvraag vir binnepasiënt beddens asook die koste geassosieer met akute binnepasiënt sorg.

Intervensies wat heropnames in hoë frekwensie gebruikers (HFG) van geestesgesondheidsdienste verminder, mag binnepasiënt koste verminder en beskikbaarheid van beddens verbeter.

Pro-aktiewe Gemeenskaps Behandeling (PGB) verwys na intervensies wat fokus op beperkte pasiënt ladings, gereelde kontakte, huisbesoeke en pro-aktiewe opvolg. Internasionale studies bewys dat PGB intervensies effektief mag wees in die vermindering van heropnames in HFGs in areas waar roetine dienste minder omvattend is.

Studie 1:

Hierdie was 'n ewekansig-beheerde studie waarin 'n groep lae frekwensie gebruikers (LFGs) van psigiatryse dienste vergelyk is met 'n groep HFGs. In die studie is bepaal dat plaaslike HFGs dieselfde kenmerke het as HFGs wat in die internasionale literatuur beskryf word. Dit is insiggewend aangesien ons beoog om 'n model aan te pas wat suksesvol was in 'n internasionale populasie van HFGs. Net soos hul internasionale teenvoeters, was die plaaslike HFGs meer geneig om jong mans te wees, meer ernstig siek te wees en meer geneig tot onwettige substans misbruik.

Studie 2:

In hierdie studie het ons die effek ondersoek wat 'n aangepaste, pro-aktiewe intervensie op heropnames, siekte graad en sosiale funksionering het, deur die intervensie groep met 'n kontrole groep te vergelyk na 12 maande. Die intervensie was 'n gemodifiseerde PGB waarin pasiënte elke twee weke gesien is, pro-aktief opgevolg is, met die klem op tuis besoeke. Na 12 maande was die intervensie pasiënte minder siek, het hulle beter sosiale funksionering rapporteer en het hulle minder heropnames en dae in die hospitaal (DIH) gehad.

Studie 3:

Hierdie studie was daarop gemik om vas te stel of die resultate wat verkry is in Studie 2, volgehou kan word oor 'n periode van 36 maande. Dit is belangrik om volgehoue effek te kan demonstreer, aangesien positiewe uitkomst dikwels afneem na afloop van die eerste 12 maande. Na afloop van 36 maande was daar steeds aansienlik minder heropnames en DIH in die intervensie groep in

vergelyking met die kontrole groep. Ten spyte van die sukses van plaaslike PGB intervensies, bly hierdie 'n hoogs gespesialiseerde en gefokusde intervensie, wat relatief duur is en moontlik nie regverdigbaar in 'n lae-hulpbron omgewing is nie.

Studie 4:

In hierdie studie het ons gepoog om 'n middeweg te vind tussen 'n hoogs gefokusde intervensie vir 'n klein groep en die minder ondersteunende roetine sorgdiens waartoe die meerderheid van pasiënte toegang het.

Hierdie was 'n telefoon-gebaseerde intervensie wat gepoog het om pasiënte en families te ondersteun met gereelde foonoproepe, asook om die gebruik van die bestaande gemeenskaps-gebaseerde opvolgdienste te fasiliteer. Na afloop van 12 maande, was daar geen verskil in heropnames tussen die twee groepe nie. Onwettige substans misbruik was hoog in beide groepe.

Gevolgtrekking

Pro-aktiewe intervensies is effektief in die vermindering van hospitalisasies in ons plaaslike omgewing, ongeag daarvan of die model aangepas word om groter pasiëntladings en minder gereelde besoeke te akkomodeer. Wanneer tuisbesoeke en gereelde kontakte egter heeltemal uitgesluit word uit die model, neem die effektiwiteit betekenisvol af. Hierdie bevindinge is belangrik in die ontwikkeling van gemeenskapsgebaseerde geestesgesondheidsdienste, aangesien dit kan help met die beplanning van meer koste-effektiewe, toekomstige programme en kan bydra tot beter uitkomst vir pasiënte.

CHAPTER 1

Introduction

Over the last fifty years, the field of psychiatry has changed considerably. Modern psychiatrists are a far cry from the paternalistic asylum keepers of the early twentieth century. Against the background of a rapidly changing world that saw the birth of the technology era and the Internet, psychiatry itself has harnessed the slipstream of these technological advances and catapulted itself into a more science orientated, evidence-based future.

In addition to the advances in psychopharmacology, genetics and neuro-imaging, the field of psychiatry has undergone radical changes. Fifty years ago, psychiatric institutions were often featured in horror movies and spoken of in hushed voices, suggesting practices of unmentionable horror. Tales of neglect and abuse brought the discipline in disrepute. Thankfully, improvements in therapies, drugs and psychiatric programmes have changed this picture considerably.

Currently, the world is seeing a global drive towards greater community involvement in psychiatric services, particularly with the provision of the bulk of required psychiatric care shifting to communities. This has resulted in a large scale reduction in acute psychiatric inpatient beds.^{1,2,3} This process of deinstitutionalization was initiated against the backdrop of a number of publications, such as the essay “Asylums” by Goffman. This work highlighted the plight of individuals with chronic mental illness and described the sequelae of institutionalization.⁴ At the same time, there was a growing awareness of the

important role psychosocial interventions may play in the long-term management of patients with chronic mental illness and that the prognosis of many of these disorders may be significantly altered with the help of ongoing interventions. The World Health Organization (WHO), following on the declaration of Alma Ata in 1978, recommended the development of community-based mental health services.^{5,6}

Deinstitutionalization

The implementation of this policy, however, has not been without challenges, which have been well-documented in international literature.^{2,3,7,8,9,10} A number of misunderstandings and misconceptions have surfaced in the years since community-based mental health services were rolled out globally. Amongst these, was the notion that community-based care would be “cheaper” than hospital-based care. In fact, the setting up of residential care in communities required ring fencing of funds and relocation of funds to community budgets. Community-based residential facilities also have to accommodate different care requirements, as the range of patients vary from those requiring 24 hour supervision, to individuals who may be able to live independently with limited supervision. In some countries, such as South Africa, the provision of residential facilities required a funding shift, meaning that funds allocated to tertiary and secondary services, would have to be allocated to district services. Lazarus reported on some of the repercussions experienced in the wake of deinstitutionalization in one South African province, which were similar to reports by international authors and included increases in rates of homelessness, the birth of so called “revolving door” patients, inadequate discharge planning and

inadequate community resources. Lazarus concluded that long-term solutions have to focus on feasible solutions that do not lose sight of actual goals.⁹

One of the unexpected barriers in the creation of residential beds, has been the resistance which policy makers were faced with in communities when exploring residential options. This was attributed to the stigma associated with mental illness. Many communities simply did not want group homes and residential facilities for mentally-ill individuals in their neighbourhood.¹¹

A number of authors, both internationally and locally, have acknowledged the existence of a sub-group of patients who can't be effectively supported in the community. These patients are either too ill or too vulnerable to live independently and require 24-hour supervision and support.^{2,3,10} In addition to this, some patients with serious mental illness and comorbid disorders have been found to be disadvantaged by deinstitutionalization, as they often require more multi-disciplinary approaches or more comprehensive resources in order to remain well.

The “Revolving Door”

The birth of “revolving door” patients has undoubtedly been another sequelae of deinstitutionalization.^{2,9} These are patients who are admitted to hospital frequently and remain well for only short periods of time, resulting in a revolving door pattern of readmissions. There are different definitions of high frequency use, but the most commonly used are Roick et al's definition requiring three admissions in 30 months and the definition of Weiden et al, who defined high frequency users (HFUs) as patients having two admissions in one year or three admissions in three years.^{12,13} Much has been published about these patients,

since they contribute significantly to pressure on inpatient beds and cost associated with acute inpatient care. Services that would impact on readmissions in HFUs could significantly reduce cost and improve bed availability.

A number of studies have explored the factors that contribute to this pattern of high frequency use or recidivism.^{12,14,15,16} HFUs have been found to be more likely to be single, young, males who have a psychotic disorder requiring more than one medication and who are more likely to use illicit substances. Non-compliance and substance use have been associated with increased readmission rates and Weiden commented on the intricate relationship between substance use and non-compliance, which made it difficult to distinguish which had come first.^{14,16} Patients with initial admission lengths exceeding 60 days and intervals of less than a year between the first two admission have been found to be more likely to become HFUs. High frequency use was also reported to be more likely in patients aged 13 to 35, who had a diagnosis of schizophrenia.¹⁵ Identifying the factors that predispose to high frequency use may make it easier to tailor services specifically to these patients and may help to identify patients who are particularly at risk of becoming HFUs, allowing for earlier intervention.

Social demographic of Western Cape Province

It is clear from the literature that revolving door patterns are influenced by individual, disease and social factors. According to the 2013 edition of the World Bank List, South Africa is considered a upper middle-income country with a gross national income of 350.6 billion US dollars.¹⁷ Low and middle- income countries are often referred to collectively as “developing countries”.

The Western Cape Province in South Africa has a unique ethnic composition and a range of social variables that are specific to this province. The province is divided in three “catchment areas”, each with a tertiary psychiatric hospital to which patients in these areas are referred. The ethnic distribution in these catchment areas is a heterogeneous combination of mostly Xhosa, mixed ethnicity and Caucasian patients.

In recent years, the province has also seen a significant influx of immigrants from other African countries such as Somalia, Malawi, Zimbabwe and Nigeria. The majority of patients in all three catchment areas have challenging social circumstances. Unemployment rates in these areas are extremely high, along with exposure to violent crimes, domestic violence and substance use. Many patients live in informal dwellings and most homes are overcrowded. The Western Cape Province also has a powerful gangster culture, which attracts young and vulnerable individuals and exposes them to violence and illicit substances.

The impact of methamphetamine use

With regards to substance use patterns in South Africa, Bateman reported specifically on the rapid increase in methamphetamine use that has reached epidemic proportion in the Western Cape Province.¹⁸ Plüddeman et al reported on data collected by the Medical Research Council (MRC) from specialist substance abuse treatment centres in Cape Town as part of the South African Community Epidemiology Network on Drug Use (SACENDU). In 2002 only 0.2% of patients seen at treatment centres reported methamphetamine as their drug of

choice, by 2004 this percentage had increased to 19.3% and by 2006 42% of patients reported methamphetamine as their drug of choice.^{19,20}

Also in 2013, Plüddeman reported on the psychiatric comorbidity associated with methamphetamine related psychiatric admissions. The mean age for patients using methamphetamine, colloquially referred to as “TIK”, was 25. Of these patients, 82% were of mixed ethnic decent, 66% were unemployed and 64% reported previous psychiatric admissions. In addition to this, 74% of patients reported aggressive behavior, 59% reported delusions and 57% hallucinations.²¹ This data highlights the impact substance use patterns have on psychiatric inpatient use and specifically reflect the effect of methamphetamine use in the province.

At present, inpatient units are inundated with methamphetamine related admissions. These patients are often acutely behaviourally disturbed, putting staff and other patients at risk. Due to the pressure on beds in acute services, these patients are often discharged prematurely, before any meaningful substance intervention can be offered.

Assertive community-based interventions

In the wake of deinstitutionalization came a new way of thinking about patients with serious mental illness and their management. Treatment has become more focused on achieving and maintaining remission and long-term management has become focused on recovery. For patients with residual symptoms, the possibility of reintegration in the community has become a reality. In addition to the standard mental health services that were established to provide mental health care in the community, a whole range of additional interventions were

conceptualized in an attempt to address the diverse needs of this new population of mentally-ill patients in the community. Some interventions were piloted primarily to reduce readmissions and reduce pressure on inpatient beds, while others attempted to enhance long-term functioning in view of full recovery. A number of these interventions share the same characteristics; frequent contacts, home-based care, multi-disciplinary approach, capped caseloads, key workers assigned to provide care and an assertive approach to outpatient care.

These include Assertive Community Treatment (ACT), Assertive Outreach (AO), Intensive Case Management (ICM) and Critical Time Intervention.²² Though small differences exist in terms of how these services function, the core modus operandi is the same. The most widely used terminology is that of the ACT services, which was adapted from the PACT (Program in Assertive Community Treatment) model initially developed by Stein and Test in the 1980s.

Their program was piloted as a time-limited project to help recently discharged patients with severe mental illness make a smooth transition to community living. The study demonstrated that some of the benefits of assertive input are lost once the support is discontinued.²³ These findings have not been replicated in other studies testing time-limited, assertive inputs, as both Rosencheck and Dixon were able to demonstrate ongoing benefits even after the intervention ceased.^{24,25} In their 2002 manual on Assertive Outreach, Burns and Firn outlined that nature of assertive interventions in great detail.¹¹ They adapted the key elements of Stein and Tests' PACT model to the following:

Key elements of ACT model (Adapted from Test 1992 by Burns et al)
A core service team provides bulk of clinical care
Primary goal is improvement in patients' functioning
Patient is assisted directly in symptom management
Ratio of staff to patient should be small (no greater than 10-15:1)
Each patient is assigned a key worker responsible for comprehensive care
Treatment is individualized between patients and over time
Patients are engaged and followed up over time
Treatment is provided in community settings
Care is continuous over time and across functional areas

The Dartmouth Assertive Community Treatment scale is often used to assess the fidelity of teams to the ACT model. The scale assesses a range of staff, patient and service-related aspects that aim to establish the degree to which the team adheres to the ACT model and provides an independent score (1-5, with 5 considered a perfect score).²⁶

Initial reports following the global roll-out of assertive interventions were quite positive. A Cochrane review performed by Marshall and Lockwood in 1998 comparing ACT with standard care services, found that ACT resulted in improved contact with services, better patient satisfaction, reduction in readmissions and less time spent in hospital.²⁷ Based on these early findings, the United Kingdom launched a countrywide initiative incorporating Assertive Outreach Teams in their mental health care program. Unfortunately, these findings were not replicated in later studies and soon after this review, a number of studies failed to demonstrate positive outcomes.^{28,29,30} Killaspy et al reported on the outcomes of an ACT study

after 36 months, revealing that there were no significant differences between the two groups.²⁹ In 2014 Killaspy et al reported on the outcomes of this same group after ten years and there was still no significant benefit associated with ACT services when compared to standard care service.³⁰ During this same time, studies from the US and Europe, were also failing to produce positive outcomes.^{31, 32}

The last straw for ACT in the UK came in 2010 when Burns et al performed a systematic review and meta-regression analysis of 64 trials (7819 patients) and found that ACT consistently failed to produce significant outcomes. The review also included measures of team fidelity, which finally proved that even teams with high fidelity to the ACT model, were not any more successful in producing positive outcomes. One of the many explanations for this failure, was that the “standard care” service had incorporated many of the salient aspects of ACT in its modus operandi, such as capped caseloads, home visits and more individualized case management. Another explanation for this was the “new team” effect, which implied that teams would initially be able to produce positive outcomes due to enthusiasm associated with the establishment of a new service, but that this effect would drop off over time.²⁸ Interestingly, during this same time period, some ACT studies in other settings were still producing positive results.^{33,34,35} Petersen et al reported on a randomized control trial of an integrated care intervention in patients with first onset psychosis and found that at two year follow-up, the intervention group had less comorbid substance use, lower positive and negative symptoms scores and better adherence to treatment.³⁶

In a 2009 publication, aptly called “The future of specialist community teams”, Tyrer commented that ACT teams found it easier to produce positive outcomes in settings where standard care was less comprehensive.³⁷ From the literature, it seems that ACT model as stand-alone service, might be nearing its end. However, this is probably due to the fact that the model has infused many standard care practices with its most salient features. This theory is reiterated by Burns in his 2010 systematic review, which concludes that ACT still has a lot to add to the future development of community-based services.²⁸ In a recent study, Clausen et al concluded that ACT interventions may be useful in reducing inpatient usage in patients with and without problematic substance use.³⁸

Transitional care interventions

Readmission rates vary significantly, but data from both UK and US studies report early readmission rates of 13%. Patients are most at risk for relapse and subsequent readmission during the first 90 days after discharge, which makes this period a common focus for interventions.³⁹ Patients are often not fully stabilized on discharge and find the transition to home environments stressful, especially if the social circumstances are less than ideal. The added pressure of daily adherence to medication regimes and coping with stigmatizing attitudes related to a recent admission, may further contribute to stress. Under these circumstances, patients are more likely to resort to substance use to help them cope, which sets off the destructive cascade of non-compliance, relapse and readmission. The transitional care model includes interventions that focus on the period of transition from in- to out-patient services. In a 2013 review of transitional interventions, Vigod et al identified three subgroups; 1) Pre-discharge

interventions, 2) Bridging Interventions and 3) Post-discharge interventions. Pre-discharge interventions include aspects like psychoeducation with or without needs assessment, bridging interventions may include aspects of both pre-and post-discharge interventions and specifically focus on “bridging” the gap between in and outpatient care and assuring continuity of care. This includes making use of a transitional care manager and enhancing communication between in- and outpatient services. Post-discharge interventions include telephone-based services that offer reminders or motivate patients and home-based visits from mental health practitioners. In their 2013 review, Vigod et al concluded that transitional interventions appear to reduce readmission rates and are more affordable to implement.³⁹

In another recent review of 11 post-discharge interventions, Steffen et al concluded that post-discharge interventions were successful in reducing readmissions.⁴⁰ In a 2014 review, Nurjannah evaluated the evidence on discharge planning and found that effective communication was one of the most important factors of successful discharge planning. Patients with complex or multiple disorders, and poor understanding of their illness were more likely to have early readmissions.⁴¹

Thanks to the post-deinstitutionalization rise in research related to community-based services, there is a large body of evidence from different settings, which is invaluable in developing and structuring new services.

Central theme and aims of this research project

This study focuses on the search for an affordable community-based intervention, which is accessible to a wide range of patients and is able to reduce

inpatient usage with or without improvement in levels of functioning of patients with serious mental illness. The development of this study was informed by the large body of evidence that is available on the topic but was mindful of the fact that none of the evidence would be directly appropriate in the context of a developing country with unique socio-demographic variables.

Study specific aims and objectives

Study 1:

The revolving door in psychiatry: comparing low-frequency users and high-frequency users of psychiatric inpatient services in a developing country

High frequency users contribute significantly to the cost and pressure associated with acute inpatient admissions. Characteristics associated with high-frequency use vary significantly between settings and are affected by a range of socio-demographic factors. In order to develop services that may effectively reduce high frequency service use, it is necessary to understand the unique characteristics of the HFUs in the context where the service is to be applied.

In this study we compared low frequency users (LFUs) of services with HFUs. The aim of the study was to identify the factors associated with high frequency use in this setting and establish whether these patterns are similar to those described internationally. The factors identified would also be useful in structuring interventions aimed at reducing high frequency use.

Study 2:

Assessing the efficacy of a modified assertive community-based treatment programme in a developing country

In their 1998 Cochrane review, Marshall and Lockwood reported that Assertive Community Treatment has been found to be more effective in reducing inpatient usage than standard care.²⁷ Tyrer et al reflected that assertive interventions are more likely to be effective in settings where standard care services are less comprehensive.³⁵ The classic PACT model, first introduced by Test and Stein, has already been modified in a number of different ways with many of the modified models producing positive outcomes.^{24,25,36}

In this non-blinded, randomized control trial we aim to evaluate the effect of an assertive community intervention on inpatient usage over a course of 12 months, compared to a control group. Inpatient usage was reflected by both readmissions as well as DIH during the study period. As a secondary outcome, we also evaluated the effect of the intervention on symptom severity and quality of life.

Study 3:

The rise of assertive community interventions in South Africa: Assessing the impact of a modified assertive intervention on readmission rates; a three year follow-up

The literature on post-discharge interventions suggests that positive effects produced initially tend to wear off over time.^{28,29,30} In newly established teams, there is often an enthusiasm that drives early outcomes, which is not sustained in the long run. It is very important to establish whether interventions are able to sustain early outcomes over time in order to justify their sustainability in the long run.

This study was a non-blinded randomized control trial comparing an assertive intervention with a control group. The trial was a continuation of Study 2, which reported on outcome after 12 months. The study aims to reflect the effect of a modified assertive intervention on inpatient usage over a 36-month period in order to establish if outcomes can be sustained over time.

Study 4:

In search of an affordable, effective post-discharge intervention: a randomized control trial assessing the influence of a telephone-based intervention on readmissions for patients with severe mental illness in a developing country.

Post-discharge interventions that focus specifically on reducing readmissions in a distinct time period after discharge often share similarities with continuous care, assertive interventions. Along with pre-discharge and “bridging” interventions, post-discharge interventions form part of the Transitional Care Model, which aims to reduce early readmissions by improving the care provided during the transition from in- to outpatient care.

In a 2013 review, Vigod et al concluded that transitional care interventions may be effective in reducing readmissions and may pose an affordable alternative to specialized assertive services.³⁹ Statistics South Africa noted a net increase in migration to the Western Cape of 3 % between the periods 2001 and 2006 as well as 2006 to 2011. Despite this increase, psychiatric service resources in the province remained static during this period. Thus, given the limited community

resources and tremendous pressure on psychiatric inpatient units in the Western Cape, a transitional care intervention, which is more affordable and accessible to a large group of patients, might be a feasible alternative to comprehensive, assertive services.

This study was a non-blinded randomized control trial in which a post-discharge intervention was compared with standard care. The aim of the study was to evaluate the effect of a less comprehensive, but more affordable telephone-based intervention on inpatient usage over a 12-month period.

References

1. Dowdal GW (1999) Mental hospitals and deinstitutionalization. *Handbook of the Sociology of Mental Health*, 25, 519-537
2. Lamb HR (1993) Lessons learned from deinstitutionalization in the US. *British Journal of Psychiatry*, 162, 587-592
3. Lamb HR, Bachrach LL (2001) Some perspectives on deinstitutionalization. *Psychiatric Services*, 52(8), 1039-1045
4. Goffman E (1961) *Asylums*. Garden City NY
5. WHO (1978) *Alma Ata: Primary Health Care Report*. WHO, Geneva
6. WHO (2001) *World Health Report, Mental Health; new understanding, new hope*. WHO, Geneva
7. Singh BS, Castle DJ (2007) Why are community psychiatry services in Australia doing it so hard? *Medical Journal of Australia*, 187(7), 410-2
8. Fakhoury W, Priebe S (2002) The process of deinstitutionalization: an international overview. *Current Opinion in Psychiatry*, 15, 187–192
9. Lazarus R (2005) Managing de-institutionalization in a context of change: The case of Gauteng, South Africa. *South African Psychiatry Review*, 8, 65-69
10. Stein DJ, Allwood C, Emsley RA (1999). Community care of psychiatric disorders in South Africa – lessons from research on deinstitutionalization. *South African Medical Journal*, 89(9), 942-943
11. Burns T, Firn M (2002) *Assertive Outreach in Mental Health; a manual for practitioners*. Oxford University Press

12. Roick C, Heider D, Kilian R, Matschinger H, Toumi M, Angermeyer MC (2004) Factors contributing to frequent use of psychiatric inpatient services by schizophrenia patients. *Social Psychiatry and Psychiatric Epidemiology*, 39, 744–751
13. Weiden P, Glazer W (1997) Assessment and treatment selection for “revolving door” inpatients with schizophrenia. *Psychiatric Quarterly*, 68, 377–392
14. Korkeila JA, Lehtinen V, Tuori T, Helenius H (1998) Frequently hospitalised psychiatric patients: a study of predictive factors. *Social Psychiatry and Psychiatric Epidemiology*, 33, 528–534
15. Gastal FL, Andreoli SB, Quintana MI, Almeida Gameiro M, Leite SO, McGrath J (2000) Predicting the revolving door phenomenon among patients with schizophrenic, affective disorders and non-organic psychoses. *Revista de Saude Publica*, 34, 280–285
16. Haywood TW, Kravitz HM, Grossman LS, Cavanaugh JL Jr, Davis JM, Lewis DA (1995) Predicting the “revolving door” phenomenon among patients with schizophrenic, schizoaffective, and affective disorders. *American Journal of Psychiatry*, 152, 856–861
17. <http://data.worldbank.org/country/south-africa>
18. Bateman C (2006) “Tik” causing a health crisis. *South African Medical Journal*, 96(8), 672-674
19. Plüddemann A, Myers BJ, Parry CD (2008) Surge in treatment admissions related to methamphetamine use in Cape Town, South Africa: implications for public health. *Drug and Alcohol Review*, 27(2), 185-9

20. South African Community Epidemiology Network on Drug Use (2007) Alcohol and drug abuse trends: update January 2002– December 2006. Medical Research Council, Cape Town
21. Plüddemann A, Dada1 S, Parry CDH, Kader R, Parker JS, Temmingh H, van Heerden S, de Clercq C, Lewis I (2013) Monitoring the prevalence of methamphetamine-related presentations at psychiatric hospitals in Cape Town, South Africa. *African Journal of Psychiatry*, 16,45-49
22. Smith L, Newton R (2007) Systematic review of case management. *Australian & New Zealand Journal of Psychiatry*, 41, 2–9
23. Stein LI, Test MA (1980) Alternative to mental hospital treatment: I. Conceptual model, treatment program, and clinical evaluation. *Archives of General Psychiatry*, 37, 392–397
24. Rosenheck RA, Dennis D (2001) Time-limited assertive community treatment for homeless persons with severe mental illness. *Archives of General Psychiatry*, 58, 1073–1080
25. Dixon L, Goldberg R, Iannone V, Lucksted A, Brown C, Kreyenbuhl J, Fang L & Potts W (2009) Use of a critical time intervention to promote continuity of care after psychiatric inpatient hospitalization. *Psychiatric Services*, 60(4), 451-458
26. Teague GB, Bond GR, Drake RE (1998) Program fidelity in assertive community treatment: development and use of a measure. *American Journal of Orthopsychiatry*, 68, 216–232
27. Marshall M, Lockwood A (2000) Assertive Community Treatment for people with severe mental disorders. *Cochrane Database Systematic Review*, (2), CD001089

28. Burns T (2010) The rise and fall of assertive community treatment?
International Review of Psychiatry, 22(2),130–137
29. Killaspy H, Kingett S, Bebbington P, Blizard R, Johnson S, Nolan F, Pilling S, King M (2009) Randomised evaluation of assertive community treatment: 3-year outcomes. British Journal of Psychiatry, 195, 81-82
30. Killaspy H, Mas-Exposito L, Marston L, King M (2014) Ten year outcomes of participants in the REACT (Randomised Evaluation of Assertive Community Treatment in North London) study. BMC Psychiatry, Oct 24,14, 296
31. Sytema S, Wunderink L, Bloemers W, Roorda L, Wiersma D (2007) Assertive community treatment in the Netherlands: a randomized controlled trial. Acta Psychiatrica Scandinavica, 116,105–112
32. McHugo GJ, Drake RE, Teague GB, Xie H (1999) Fidelity to assertive community treatment and client outcomes in the New Hampshire dual disorders study. Psychiatric Services, 50, 818–824
33. Karow A, Reimer J, König HH, Heider D, Bock T, Huber C, Schöttle D, Meister K, Rietschel L, Ohm G, Schulz H, Naber D, Schimmelmann BG, Lambert M (2012) Cost-effectiveness of 12-month therapeutic assertive community treatment as part of integrated care versus standard care in patients with schizophrenia treated with quetiapine immediate release (ACCESS trial). Journal of Clinical Psychiatry, 73(3), e402-8
34. Nishio M, Ito J, Oshima I, Suzuki Y, Horiuchi K, Sono T, Fukaya H, Hisanaga F, Tsukada K (2012) Preliminary outcome study on assertive community treatment in Japan. Psychiatry and Clinical Neurosciences, 66(5), 383–389

35. Kim T, Jeong J, Kim Y, Kim Y, Seo H, Hong S (2015) Fifteen-month follow up of an assertive community treatment program for chronic patients with mental illness. *BMC Health Services Research*, 15, 288
36. Petersen L, Jeppesen P, Thorup A, Abel MB, Øhlenschlaeger J, Christensen TØ, Krarup G, Jørgensen P, Nordentoft M (2005) A randomised multicentre trial of integrated versus standard treatment for patients with a first episode of psychotic illness. *British Medical Journal*, 331(7517), 602
37. Tyrer P (2007) The future of specialist community teams in the care of those with severe mental illness. *Epidemiologia e psichiatria sociale*, 16(3), 225-30
38. Clausen H, Landheim A, Odden S, Benth JS, Heiervang KS, Stuen HK, Killaspy H, Ruud T (2016) Hospitalization of high and low inpatient service users before and after enrollment into Assertive Community Treatment teams: a naturalistic observational study. *International Journal of Mental health Systems*, 10, 14
39. Vigod SN, Kurdyak PA, Dennis C, Leszcz T, Taylor VH, Blumberger DM, Seitz DP (2013) Transitional interventions to reduce early psychiatric readmissions in adults: systematic review. *British Journal of Psychiatry*, 202, 187–194
40. Steffen S, Koster M, Becker T & Puschner B (2009) Discharge planning in mental health care: a systematic review of the recent literature. *Acta Psychiatrica Scandinavica*, 120, 1–9
41. Nurjannah I, Mills J, Usher K, Park T (2014) Discharge planning in mental health care: an integrative review of the literature. *Journal of Clinical Nursing*, 23, 1175-1185




Chapter 2

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The Revolving Door Phenomenon in Psychiatry: Comparing Low Frequency and
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The revolving door phenomenon in psychiatry: comparing low-frequency and high-frequency users of psychiatric inpatient services in a developing country

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Abstract

Introduction Deinstitutionalization has led to a dramatic reduction of inpatient beds and subsequent increase in pressure on available beds. Another consequence of deinstitutionalization has been the phenomenon of the revolving door patient; high-frequency users (HFUs) admitted to hospital repeatedly, remaining well for only short periods of time. The purpose of the study was to determine factors that contribute to HFU of inpatient psychiatric services by schizophrenia and schizo-affective disorder subjects in a developing country with a view to understanding this phenomenon better.

Methods Subjects were divided into HFU and low-frequency user (LFUs) groups for comparison with regard to selected variables.

Results HFUs had higher PANSS scores ($p < 0.01$), were more likely to admit to lifetime substance use ($p = 0.01$), be on mood stabilizers ($p < 0.01$) and also to have been crisis (premature) discharges ($p < 0.01$). LFUs were more likely to have been treated with depot medication ($p < 0.01$). Multivariate analysis showed crisis discharge ($p = 0.03$) and depot use ($p = 0.03$) to be the only remaining significant predictors of HFU versus LFU status.

Discussion Our findings suggest HFUs' characteristics to be similar across different settings, with under-utilization of depot antipsychotics and early discharge from hospital as particular contributors to high-frequency use of services in our sample.

Conclusion Results seem to indicate that HFU-specific interventions are vital to addressing these issues.

Keywords Schizophrenia Treatment-resistance
 Revolving door Depot antipsychotic

Introduction

Deinstitutionalization is a well-established policy in mental health services in the twenty-first century. Most first-world countries implemented policies that facilitated the move to community-based psychiatric care during the past two decades of the previous century. However, some of the sequelae of these policies are only now apparent, allowing for a more critical look at the premises on which deinstitutionalization was initially based [2, 18, 36]. Although there is little doubt that the motivation behind the initial concept was to improve the quality of care of mental health users, unforeseen consequences that impact on both this and the development of future mental health policies have arisen.

In practice, deinstitutionalization led to a dramatic reduction in the number of acute and sub-acute inpatient psychiatric beds. The intention was that this would be accompanied by the establishment of community-based facilities for both acute care and residential placement. Although this policy succeeded in some countries, many others failed to establish the community-based services required to deal with the discharged mental health care

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users. Furthermore, with the resultant decrease in the number of in-patient facilities, admission policies at psychiatric hospitals worldwide needed to be changed. The net effect was that only the most severely ill patients could now be admitted to and kept in hospital. Due to the pressure on the available beds, even those patients who were admitted could stay in hospital for only a brief period and had to be discharged within days to a few weeks after admission. The inevitable result has been that some patients have had to be discharged prematurely in order to accommodate those who were more severely ill. This has resulted in high readmission rates and led to the birth of the concepts of the “revolving door” and “high-frequency users” (HFUs) to describe patients with severe mental illness who are frequently admitted to hospital and remain well for only short periods of time [7, 9, 40]. Fakhoury and Priebe [7] explored the progress of deinstitutionalization strategies in various countries and found that while some areas, such as the UK, were quite successful in providing community-based programs, even there the implementation had not been without problems. Resources in the community were often overwhelmed and the manifestations of stigmatization became more apparent. By contrast, in East Asia and Japan, there had been almost no move to deinstitutionalization, which was ascribed to social, cultural, and political factors in those countries.

In South Africa, as in many other parts of the world, deinstitutionalization started in the early 1990s and was vigorously pursued throughout the country. However, staff shortages and inadequate community resources resulted in some unexpected and unintended repercussions, including large discrepancies in service delivery between different provinces, stigmatization of patients in the community, high levels of patient abuse, homelessness, and recurrent readmissions to hospital of patients with severe mental illness [20, 24]. Lazarus [20] commented on some of the repercussions of deinstitutionalization in post-apartheid South Africa, citing premature discharges, inadequate preparation for discharge, inadequate community resources, the revolving door phenomenon as well as abuse and homelessness as worrying sequelae. Stein et al. [39] commented that clinicians in South Africa needed to find their own model of providing community care to the mentally ill and stressed that without appropriate community care, the negative consequences of deinstitutionalization could be significant.

Roick et al. [32] defined high-frequency use as more than three admissions in 30 months and found that 12% of subjects in their sample ($n = 307$) met this criterion. Their results indicated that young males were at higher risk for high-frequency use and that an increased number of previous admissions, as well as higher scores on measures of psychosis were found to be strong predictors for

recidivism. In a Finnish study, Korkeila et al. [17] made similar conclusions and added that patients with longer length of hospital stay were more likely to become HFUs in future. Gastal et al. [9] found HFUs more likely to be younger, single males with a diagnosis of a psychotic illness.

The literature seems to present conflicting evidence for the role of substance abuse in high-frequency use of psychiatric services [11, 21, 32, 33, 40, 41]. Weiden commented on the intricate relationship between co-occurring substance abuse and non-adherence, with non-adherence often cited as primary precipitant when substance abuse was clearly contributing significantly. He stressed that relapse is often precipitated by the simultaneous discontinuation of medication and commencement of substance abuse [40].

Several authors have contended that patients with poor support networks and challenging social environments are likely to remain well for shorter periods of time [3, 16, 27, 32]. Lay et al. [19] concluded that homelessness living alone and lower levels of education were all factors that increased the use of services.

Both type and severity of illness affect the frequency of service utilization. Individuals with psychotic illnesses such as schizophrenia, who had longer stays in hospital (especially during the first admission) and higher scores on measures of psychopathology, seem to be at greater risk for becoming HFUs [9, 17, 19, 27, 29, 32, 35].

The pressure on inpatient beds, caused by the reduction in bed numbers, leads to premature discharge of patients who are not yet stable to make room for those who are more ill. This practice may further perpetuate the revolving door pattern. Durbin et al. [5] found modest evidence that preparing patients properly for discharge and focusing on clinical stability, may protect against early readmission. Patients were found to be at highest risk for readmission in the first 30 days after discharge.

It is commonly accepted that non-adherence and partial adherence are extremely prevalent and contribute significantly to relapse rates [14, 22, 41]. In a study by Robinson the relapse rate was found to be five times higher in patients who were non-compliant [31]. There are a number of factors that may influence adherence to medication, such as side-effects, understanding of illness and need for medication, ongoing positive and negative symptoms, as well as substance abuse [8, 41]. The CATIE study confirmed that discontinuation of medication may be as high as 74% in 18 months, independent of whether first or second generation anti-psychotics were being used [23]. The most commonly cited reasons were side-effects and inefficacy of medication.

Both Kane and Weiden have stressed that non-adherence is an essential component of the illness and should be

viewed as such [13, 41]. Focus should be on symptom management and improving functionality, rather than getting enveloped in a battle of wills around treatment adherence. Rabinowitz et al. [30] compared a group of patients on novel and second generation anti-psychotics and found that after 2 years the readmission rate was significantly higher for patients on conventional anti-psychotics.

Considering the pressure on inpatient service caused by these HFUs, it has become increasingly important to understand the factors that may contribute to this phenomenon. Early recognition of those at risk may inform interventions that could reduce the prevalence of recidivism. The purpose of this study, therefore, was to explore factors that may affect patient admission patterns in a developing country, so that effective policies may be implemented to reduce the revolving door phenomenon.

Methods

This study was conducted in the three large state mental health hospitals (Lentegeur, Stikland and Valkenberg) in Cape Town, South Africa. These are the only dedicated psychiatric inpatient facilities in the whole of the Western Cape Province, serving a population of approximately 5 million people. The combined bed capacity for acute psychotic patients in the three hospitals is 450, and patients are admitted to a particular facility based on their residential address.

All subjects (18–59, extremes included) who presented for admission over an 8 month period and who had a previously established, documented (by one of the three hospitals) diagnosis of schizophrenia or schizo-affective disorder (DSM-IV-TR) were considered for inclusion [1]. In order to be included, participants had to give written informed consent. The study was approved by the research ethics committees of both the Universities of Stellenbosch and Cape Town.

To be included as low-frequency users (LFUs), subjects only needed to meet the aforementioned criteria, whereas HFUs, in addition to the above, also had to meet one of the following (based on a modification of Weiden's HFU-criteria): (a) C3 admissions in 18 months/C5 in 36 months; (b) C2 admissions in 12 months AND treated with clozapine; or (c) C2 admissions in 12 months AND C120 days in hospital [40]. Subjects were excluded from both groups if they had (1) a serious, unstable co-morbid medical illness that could affect admission to hospital; (2) were unable to give written informed consent or (3) if another co-morbid Axis I or II diagnosis other than schizophrenia or schizo-affective disorder was the current focus of treatment.

A structured, computer-based case report form (eCRF) was used to collect relevant demographic data, information with reference to previous and current medical history as well as history of substance use/abuse. In terms of psychiatric history, full data with regard to current and previous episodes of illness, number of episodes and hospitalizations (as well as duration), current and previous medications, age of onset, family history and co-morbid diagnosis were collected. The interview was augmented with information gathered from family members of participants where possible. Hospital records were scrutinized to verify information and to gather data. Admission records of all hospitals are linked by each patient having only one folder number that is used across the system. All subjects were clinically assessed within 2 days of admission with the Positive and Negative Syndrome Scale for Schizophrenia (PANSS) [15]. All raters who used the eCRF and who did clinical ratings attended a special training workshop. Interrater reliability testing was done for the PANSS and the concordance rate for all raters exceeded 0.8.

All data were entered into a single database. As some of the data were descriptive in nature, results are provided as means with standard deviations, where appropriate. Categorical variables were compared using chi-square or Fisher's exact test, where applicable. Unadjusted odds ratios (OR) are reported for significant findings with lower limits and upper limits. Adjusted odds ratios are reported in the multivariate analysis. Differences in groups in terms of continuous variables were analyzed using Student t test or Mann–Whitney U test, depending on distribution. All statistical tests were two-sided and a significance level of 0.05 was used throughout.

Results

Data were collected from 146 participants; 51 LFUs and 95 subjects meeting the HFU criteria. Results in text always reported as HFUs versus LFUs where appropriate. A diagnosis of schizo-affective disorder was significantly more prevalent in the HFU-group ($p = 0.019$). The majority of subjects in both groups were male ($p = 0.19$) and living with family ($p = 0.61$). See Table 1 for full demographic details. HFUs had higher PANSS scores ($p < 0.01$) on admission. HFUs were more likely to have previously been treated on mood stabilizers ($\chi^2 = 12.41$, $df = 1$, $p < 0.01$; OR 3.84; range 1.79–8.20), to admit to lifetime substance use ($\chi^2 = 6.35$, $df = 1$, $p = 0.01$; OR 2.98, range 1.29–6.87) and have been crisis (premature) discharges ($\chi^2 = 8.2$, $df = 1$, $p < 0.01$; OR 4.29, range 1.49–12.35). LFUs were also more likely to have been treated with depot medication ($\chi^2 = 3.19$, $df = 1$, $p < 0.01$; OR 3.19, range 1.54–6.61). Full comparative

Table 1 Demographic profiles of high-frequency (HFU) and low-frequency (LFU) users of psychiatric inpatient services

	HFU			LFU			χ^2	df	t value	p
	Mean (\pm SD)	%	N	Mean (\pm SD)	%	N				
Gender										
Male		76.84	95		66.67	51	1.76	1		0.19
Marital status										
Married		7.36	93		18.37	49	7.67	4		0.10
Education										
Elementary school or less		77.89	94		84.31	51	7.99	5		0.16
Mean age										
In years (y)	33.57 y (\pm 10.00 y)		93	33.80 y (\pm 9.77 y)		49		140	2.4	0.02
Income										
Disability grant		80.00	90		73.33	45	5.09	2		0.08
Social support										
Living with family		89.01	91		91	45	1.00	2		0.61
Substance use										
Lifetime use of drugs		77.78	72		54.05	37	6.52	1		0.01
Use in past 3 months		44.83	58		35.71	28	0.64	1		0.42
Alcohol										
2 or more CAGE criteria met		44.44	63		34.29	35	0.96	1		0.32

Table 2 Comparing HFUs and LFUs on admission

Variable	HFU			LFU			χ^2	df	t value	p
	Mean (\pm SD)	%	N	Mean (\pm SD)	%	N				
No. of previous admissions (lifetime)	7.64 (\pm 4.68)		89	4.80 (\pm 3.55)		45		132	3.58	\0.01
DUP	45.97 (\pm 54.83)		87	101.55 (\pm 223.70)		44		129	2.20	0.03
Involuntary admission		93.41	91		84.44	45	3.96	2		0.13
Police involved in admission		53.33	90		46.67	45	0.53	1		0.46
On depot medication		34.07	91		62.22	45	9.73	1		\0.01
On mood stabilizer		58.24	91		26.67	45	12.41	1		\0.01
On antidepressant		4.40	91		4.44	45	0.00	2		0.99
Poor compliance ^c		75.82	91		65.91	44	2.19	2		0.34
Stopped meds before admission		81.32	91		75.00	44	0.72	1		0.40
Treatment resistance ^a		23.08	91		0.00	45				\0.01*
Family history of mental illness		46.07	89		31.11	45	2.76	1		0.10
Crisis discharge ^b		30.00	90		9.09	44	8.20	1		0.01

DUP Duration of untreated psychosis to current admission (days)

* Fisher's exact test, two-tailed

☐ According to Kane criteria [12]

☐ At previous admission, subject was discharged from hospital too early in clinician's opinion, due to bed pressure

☐ Medication taken less than 50% of the time

results are provided in Table 2. Differences in PANSS scores on admission are presented in Table 3.

To test for the effects of possible confounders, we also performed logistic regression analysis (Table 4) with the research group (HFU vs. LFU) as the dependent variable and

all the variables that were significant at the dichotomous level as predictor variables (age, use of depot antipsychotic, use of mood stabilizer, drug use in the last 3 months before admission, whether the last discharge was a "crisis (premature) discharge"). Only two factors emerged as

Table 3 Positive and Negative Syndrome Scale (PANSS) scores on admission

PANSS Subscale	HFU		LFU		t value	df	p
	Mean (\pm SD)	N	Mean (\pm SD)	N			
Positive	29.7 (\pm 7.9)	94	24.4 (\pm 12.2)	51	3.2	146	\0.01
Negative	26.5 (\pm 8.7)	94	20.4 (\pm 11.4)	51	3.6	146	\0.01
General	49.2 (\pm 11.1)	94	40.3 (\pm 18.8)	51	3.6	146	\0.01
Total	105.3 (\pm 23.4)	94	85.1 (\pm 40.3)	51	3.9	146	\0.01

Table 4 Logistic regression

	Const.B0	Depot	Mood stabilizer	Drug use	Crisis discharge
Estimate	-0.06	1.54	-0.96	-0.91	-1.42
Standard Error	0.49	0.49	0.49	0.51	0.66
t(98)	-0.13	3.12	-1.95	-1.78	-2.16
p-level	0.90	0.00	0.05	0.08	0.03
-95% CL	-1.04	0.56	-1.93	-1.93	-2.74
?95% CL	0.92	2.52	0.02	0.10	-0.11
Wald's Chi-square	0.02	9.74	3.79	3.17	4.65
p-level	0.90	0.00	0.05	0.07	0.03
Odds ratio (unit ch)	0.94	4.66	0.38	0.40	0.24
-95% CL	0.35	1.75	0.15	0.15	0.06
?95% CL	2.50	12.40	1.02	1.11	0.89
Odds ratio (range)		4.66	0.38	0.40	0.24
-95% CL		1.75	0.15	0.15	0.06
?95% CL		12.40	1.02	1.11	0.89

Model: Logistic regression (logit) N of 0's: 66 1's: 37 Dependent variable: Grouping baseline loss: Max likelihood (MS-error scaled to 1) Final loss: 53.538873645 χ^2 (4) = 27.434; p = 0.00002

significant, namely the use of depot medication (p = 0.03) and crisis discharge (p = 0.03).

Data for current illicit substance use was available for 58 HFUs and 28 LFUs and was high in the past 3 months in both groups (26 vs. 10; p = 0.42), with cannabis the drug of choice for both and mandrax (both) and methamphetamine, and heroin (HFUs only) also reported. Current alcohol use data were available for 63 HFUs and 35 LFUs with a high number of subjects in both groups answering positively to two or more questions of the CAGE criteria (28 vs. 12; p = 0.32) [6]. Subjects in both groups admitted that they used alcohol to relieve their symptoms (19 vs. 10, p = 0.90), but subjects in both groups also reported that alcohol made the symptoms of psychosis worse (33 vs. 19; p = 0.79).

We have reliable data from only one of the three centers on the number of participants excluded from the study. This center contributed 86 participants (59%) to the study. At this center, five potential participants were excluded from the study, four because of intellectual disability and one due to AIDS.

Discussion

Our results indicate that the profile of high-frequency users seems to be similar across cultures and geographical boundaries [11, 17].

Levels of compliance with treatment before current admission were very low and conversely, the level of medication discontinuation before admission was very high. This reiterates Weiden's findings on the role of non-adherence and mirrors findings from other parts of the world which show that compliance with antipsychotic medication is generally inadequate and that new strategies to improve compliance are urgently needed [13, 22, 41]. Closely linked to this is the significant difference in the use of depot antipsychotics between the two groups. In our study, LFUs were significantly more likely to be on depot antipsychotics. In fact, the use of depot antipsychotics turned out to be one of the two major factors distinguishing HFUs from LFUs. This seems to support the notion that assured drug delivery (at this time only possible through the use of depot anti-psychotics) is a major determinant of outcome [4, 25, 34].

Much has been written in recent literature about the use of depot anti-psychotics. Though it may seem they have become less popular since the second generation anti-psychotics became readily available, the literature seems to indicate that they are superior in promoting compliance and many authors suggest more serious consideration should be given to these medications as they may significantly reduce relapse rates in individuals who have difficulty with compliance [4, 10, 13, 14, 25, 34]. Gutwinski et al. [10] found significantly lower readmissions rates for patients on depot medication compared to those on second generation anti-psychotics. These findings were duplicated by Schooler when comparing patients on injectables with those using oral anti-psychotics [34]. There is modest evidence that depot medication may significantly reduce relapse rates in the long term [4].

The other major determinant of status was crisis discharges. This refers to a policy where patients with severe mental illness are discharged from hospital prematurely due to pressure to admit more severely ill and behaviorally disturbed patients. Niehaus et al. [28] have already presented evidence that such crisis discharges may exacerbate the revolving door effect in one of the psychiatric hospitals from which patients were recruited for this study and our findings seem to support that this is the case across the platform.

Our data show that not only did HFUs have more frequent admissions, but they were also admitted much sooner after becoming non-compliant when compared to their low-frequency counterparts. A number of factors could account for this: first, it may indicate that they relapse sooner as their illness is more resistant or more sensitive to changes in medication. Second, they may also have a more severe form of illness with early onset of disruptive behavior that would prompt carers to take action. It may, however, also be due to the fact that a majority of the LFUs were receiving depot medication, eliminating the possibility of a period of partial compliance prior to complete discontinuation. A fourth possibility would be that the high-frequency users have more rapid access to inpatient services, as they are invariably well-known to inpatient units, whereas low-frequency users may be managed longer by community services, especially if they seem less ill at initial contact. Our finding that mean PANSS scores at baseline were higher for the HFU subjects concur with those of Roick et al. [32]. This may suggest that they are more prone to behavioral disturbance or aggression, which would fast-track their access to acute admission wards. The fact that 23% percent of the HFUs in our population were reported to be treatment-resistant (versus 0% in the LFU group) would support the theory that they have a more severe form of the illness.

The majority of patients in both groups were admitted as involuntary outpatients. This is most likely a reflection of

the pressure experienced by acute inpatient units in South Africa, where patients are often quite ill by the time they are admitted. This is reflected by the high-PANSS scores of both groups, as well as the large percentage of patients who were brought in for admission by the police. Consequently, though our results seem to support that HFUs in our limited resource setting have similar characteristics to their counterparts in developed countries, this may not be the case for LFU characteristics. This idea is supported by the high number of LFUs in our population who receive disability payments, as well as education levels and social support networks that were similar in our two groups of subjects. Furthermore, lifetime admission rates of LFUs are only marginally less than those cited for HFUs by Roick et al. [32].

Another interesting finding was the higher prevalence of schizo-affective disorder amongst the HFUs, which supports findings reported by Haywood et al. [11]. The significance of mood symptoms in schizophrenia has been much debated; however, the general consensus seems to be that mood symptoms later on in the illness are indicators of poorer prognosis [37]. Also, this diagnosis has implications for medication choices, as patients often require mood stabilizers and, therefore, more complex treatment regimes, which may in turn affect their compliance by increasing the pill burden [4, 7, 20].

The high incidence of alcohol use in both groups is cause for concern. Subjects use alcohol to relieve symptoms despite the fact that more than half acknowledged that it made them feel worse. This may reflect desperation, attempts at self-medication, poor insight, poor impulse control or perhaps another, as yet undefined factor. The higher incidence of illegal substance abuse amongst HFUs seems to support most views in the current literature [11, 26, 41]. Both Haywood and Weiden commented on the frequent co-occurrence of substance abuse and non-compliance and the difficulties in distinguishing the temporal and causal relationship [11, 41]. Our findings certainly suggest that admissions are often precipitated by non-compliance and substance abuse occurring simultaneously.

It is hardly surprising that the most commonly abused illegal substance in both groups was found to be cannabis. Much has been written about the relationship between cannabis and psychotic disorders [26]. It is now commonly accepted that the use of cannabis may not only trigger a psychotic illness in a predisposed individual, but it is likely to perpetuate existing symptomatology. Interestingly, only HFUs acknowledged use of metamphetamines, a drug which is currently being abused heavily in the Western Cape Metropole, where this study was conducted [38].

In South Africa, many patients with enduring mental illness receive a disability grant from the state. This barely covers their most basic expenses, but is often the only

income for a whole family. The majority of participants in both groups received disability grants as their main source of income, which certainly implies a significant social burden. In a population of patients with severe mental illness and recurrent admissions, one would expect to find a large number of the HFUs in supported housing or residential placements, yet this is not the case. One may speculate that the significant number of both patient groups still living with family could be seen as an indicator of greater acceptance of mental illness in developing societies. Alternatively, it may simply indicate a paucity of community placements available to this population. This increased burden of care on families may be one of the factors driving the revolving door. There can be little doubt that limited resources contribute to the revolving door phenomenon. Additional supported housing may offer high-frequency users the structure and support needed to cope with their symptoms and remain compliant with their medication. The availability of better resources in the community, particularly outreach programs that may enhance compliance with treatment and improve ongoing contact between mental health services and users, may play a significant role in reducing relapse and readmission and enhancing outcomes.

The study has a number of possible limitations, one of which is that we cannot be certain that all possible HFU patients were considered for inclusion. Some patients may have been excluded from the service as a result of practical issues such as a residential address outside of the area serviced by the treatment team. Also, staff turnover in some parts of the service may have affected recruitment. A further limitation is the fact that not all data were available for all subjects and that recall bias on the side of the subject and/or carers may have affected the quality of the data. The fact that we only received reliable data on exclusions from one of the centers should also be considered a limitation.

Conclusion

Our findings suggest HFUs' characteristics to be similar to those reported in first world settings. Clinicians in developing countries should explore the use of depot medication in these patients and keep medication regimes as uncomplicated as possible. Within the context of the impact early discharges have, psychosocial interventions may be particularly helpful, with specific focus on education and empowerment of primary carers.

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References

- American Psychiatric Association (2000) The diagnostic and statistical manual of mental disorders, Fourth edition, Text revision, (DSM-IV-TR)
- Arboleda-Florez J (2006) Forensic psychiatry: contemporary scope, challenges and controversies. *World Psychiatry* 5:87–91
- Boardman AP, Hodgson RE, Lewis M, Allen K (1997) Social indicators and the prediction of psychiatric admission in different diagnostic groups. *Br J Psychiatry* 171:457–462
- David A, Adams CE, Eisenbruch M, Quraishi S, Rathbone J (2005) Depot fluphenazine decanoate and enanthate for schizophrenia. *Cochrane Database Syst Rev* CD000307
- Durbin J, Lin E, Layne C, Teed M (2007) Is readmission a valid indicator of the quality of inpatient psychiatric care? *J Behav Health Serv Res* 34:137–150
- Ewing JA (1984) Detecting alcoholism. The CAGE questionnaire. *JAMA* 252:1905–1907
- Fakhoury W, Priebe S (2002) The process of deinstitutionalization: an international overview. *Curr Opin Psychiatry* 15:187–192
- Fenton WS, Blyler CR, Heinssen RK (1997) Determinants of medication compliance in schizophrenia: empirical and clinical findings. *Schizophr Bull* 23:637–651
- Gastal FL, Andreoli SB, Quintana MI, Almeida Gameiro M, Leite SO, McGrath J (2000) Predicting the revolving door phenomenon among patients with schizophrenic, affective disorders and non-organic psychoses. *Rev Saude Publica* 34:280–285
- Gutwinski S, Muller P, Koller M (2007) Intervals between hospitalisations in schizophrenia patients under antipsychotics in depot-form versus oral second generation antipsychotics. *Psychiatr Prax* 34:289–291
- Haywood TW, Kravitz HM, Grossman LS, Cavanaugh JL Jr, Davis JM, Lewis DA (1995) Predicting the “revolving door” phenomenon among patients with schizophrenic, schizoaffective, and affective disorders. *Am J Psychiatry* 152:856–861
- Kane J, Honigfeld G, Singer J, Meltzer H (1988) Clozapine for the treatment-resistant schizophrenic. A double-blind comparison with chlorpromazine. *Arch Gen Psychiatry* 45:789–796
- Kane JM (2006) Review of treatments that can ameliorate non-adherence in patients with schizophrenia. *J Clin Psychiatry* 67(Suppl 5):9–14
- Kane JM (2007) Treatment strategies to prevent relapse and encourage remission. *J Clin Psychiatry* 68(Suppl 14):27–30
- Kay SR, Fiszbein A, Opler LA (1987) The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophr Bull* 13:261–276
- Kent S, Yellowlees P (1995) The relationship between social factors and frequent use of psychiatric services. *Aust NZ J Psychiatry* 29:403–408
- Korkeila JA, Lehtinen V, Tuori T, Helenius H (1998) Frequently hospitalised psychiatric patients: a study of predictive factors. *Soc Psychiatry Psychiatr Epidemiol* 33:528–534
- Lamb HR, Bachrach LL (2001) Some perspectives on deinstitutionalization. *Psychiatr Serv* 52:1039–1045
- Lay B, Lauber C, Rossler W (2006) Prediction of in-patient use in first-admitted patients with psychosis. *Eur Psychiatry* 21:401–409
- Lazarus R (2005) Managing de-institutionalization in a context of change: the case of Gauteng, South Africa. *S Afr Psychiatry Rev* 8:65–69
- Leon SC, Lyons JS, Christopher NJ, Miller SI (1998) Psychiatric hospital outcomes of dual diagnosis patients under managed care. *Am J Addict* 7:81–86
- Leucht S, Heres S (2006) Epidemiology, clinical consequences, and psychosocial treatment of nonadherence in schizophrenia. *J Clin Psychiatry* 67(Suppl 5):3–8

- Lieberman JA, Stroup TS, McEvoy JP, Swartz MS, Rosenheck RA, Perkins DO, Keefe RS, Davis SM, Davis CE, Lebowitz BD, Severe J, Hsiao JK (2005) Effectiveness of antipsychotic drugs in patients with chronic schizophrenia. *N Engl J Med* 353:1209–1223
- Lund C, Flisher AJ (2006) Norms for mental health services in South Africa. *Soc Psychiatry Psychiatr Epidemiol* 41:587–594
- McEvoy JP (2006) Risks versus benefits of different types of long-acting injectable antipsychotics. *J Clin Psychiatry* 67(Suppl 5):15–18
- Moore TH, Zammit S, Lingford-Hughes A, Barnes TR, Jones PB, Burke M, Lewis G (2007) Cannabis use and risk of psychotic or affective mental health outcomes: a systematic review. *Lancet* 370:319–328
- Munk-Jorgensen P, Mortensen PB, Machon RA (1991) Hospitalization patterns in schizophrenia. A 13-year follow-up. *Schizophr Res* 4:1–9
- Niehaus DJ, Koen L, Galal U, Dhansay K, Oosthuizen PP, Emsley RA, Jordaan E (2008) Crisis discharges and readmission risk in acute psychiatric male inpatients. *BMC Psychiatry* 8:44
- Pedersen J, Aarkrog T (2001) A 10-year follow-up study of an adolescent psychiatric clientele and early predictors of readmission. *Nord J Psychiatry* 55:11–16
- Rabinowitz J, Lichtenberg P, Kaplan Z, Mark M, Nahon D, Davidson M (2001) Rehospitalization rates of chronically ill schizophrenic patients discharged on a regimen of risperidone, olanzapine, or conventional antipsychotics. *Am J Psychiatry* 158:266–269
- Robinson D, Woerner MG, Alvir JM, Bilder R, Goldman R, Geisler S, Koreen A, Sheitman B, Chakos M, Mayerhoff D, Lieberman JA (1999) Predictors of relapse following response from a first episode of schizophrenia or schizoaffective disorder. *Arch Gen Psychiatry* 56:241–247
- Roick C, Heider D, Kilian R, Matschinger H, Toumi M, Angermeyer MC (2004) Factors contributing to frequent use of psychiatric inpatient services by schizophrenia patients. *Soc Psychiatry Psychiatr Epidemiol* 39:744–751
- Sanguinetti VR, Samuel SE, Schwartz SL, Robeson MR (1996) Retrospective study of 2,200 involuntary psychiatric admissions and readmissions. *Am J Psychiatry* 153:392–396
- Schooler NR (2003) Relapse and rehospitalization: comparing oral and depot antipsychotics. *J Clin Psychiatry* 64(Suppl 16):14–17
- Segal SP, Akutsu PD, Watson MA (2002) Involuntary return to a psychiatric emergency service within twelve months. *Soc Work Health Care* 35:591–603
- Singh BS, Castle DJ (2007) Why are community psychiatry services in Australia doing it so hard? *Med J Aust* 187:410–412
- Siris SG (2000) Depression in schizophrenia: perspective in the era of “Atypical” antipsychotic agents. *Am J Psychiatry* 157:1379–1389
- South African Community Epidemiology Network on Drug Use (2007) Alcohol and drug abuse trends: update January 2002–December 2006. Medical Research Council, Cape Town
- Stein DJ, Allwood C, Emsley RA (1999) Community care of psychiatric disorders in South Africa—lessons from research on deinstitutionalization. *S Afr Med J* 89:942–943
- Weiden P, Glazer W (1997) Assessment and treatment selection for “revolving door” inpatients with schizophrenia. *Psychiatr Q* 68:377–392
- Weiden PJ (2007) Understanding and addressing adherence issues in schizophrenia: from theory to practice. *J Clin Psychiatry* 68(Suppl 14):14–19

Chapter 3

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RESEARCH ARTICLE

Open Access

Assessing the efficacy of a modified assertive community-based treatment programme in a developing country

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Abstract

Background: A number of recently published randomized controlled trials conducted in developed countries have reported no advantage for assertive interventions over standard care models. One possible explanation could be that so-called "standard care" has become more comprehensive in recent years, incorporating some of the salient aspects of assertive models in its modus operandi. Our study represents the first randomised controlled trial assessing the effect of a modified assertive treatment service on readmission rates and other measures of outcome in a developing country.

Methods: High frequency service users were randomized into an intervention ($n = 34$) and a control ($n = 26$) group. The control group received standard community care and the active group an assertive intervention based on a modified version of the international model of assertive community treatment. Study visits were conducted at baseline and 12 months with demographic and illness information collected at visit 1 and readmission rates documented at study end. Symptomatology and functioning were measured at both visits using the PANSS, CDSS, ESRs, WHO-QOL and SOFAS.

Results: At 12 month follow-up subjects receiving the assertive intervention had significantly lower total PANSS ($p = 0.02$) as well as positive ($p < 0.01$) and general psychopathology ($p = 0.01$) subscales' scores. The mean SOFAS score was also significantly higher ($p = 0.02$) and the mean number of psychiatric admissions significantly lower ($p < 0.01$) in the intervention group.

Conclusions: Our results indicate that assertive interventions in a developing setting where standard community mental services are often under resourced can produce significant outcomes. Furthermore, these interventions need not be as expensive and comprehensive as international, first-world models in order to reduce inpatient days, improve psychopathology and overall levels of functioning in patients with severe mental illness.

Background

In recent years there has been a worldwide focus on assertive community interventions in an attempt to address some of the repercussions of the implementation of deinstitutionalization [1-6]. Although these interventions have often been implemented under different names such as assertive outreach, intensive case management and assertive community treatment, essentially they have had the same core characteristics [4,7] (See Additional file 1).

A Cochrane review published in 1998 concluded that assertive interventions exhibited several advantages above standard care, such as improved engagement with services, reduction in readmissions and days spent in hospital (DIH), benefits in employment and accommodation status, as well as improved patient satisfaction [3]. The review found no differences in severity of psychopathology or level of functioning, but reported a reduction in inpatient costs, even though no benefits were shown when other costs were taken in account.

With the exception of Lambert et al, recent publications have failed to replicate the previously reported efficacy of assertive interventions over standard care models, with a number of randomized controlled trials

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showing no advantage for Assertive Community Treatment (ACT) in reducing inpatient care and other clinical outcomes [2,4-6,8,9]. Improved engagement with services and increased patient satisfaction has been the only consistently positive findings. One of the explanations offered is the likelihood that so-called "standard care" has become more comprehensive in recent years, incorporating some of the salient aspects of assertive models in its modus operandi [2,5,10]. Some studies were criticized for not defining control groups well enough, since "treatment as usual" may differ between settings and should therefore be properly defined as a separate intervention [10]. Another possible explanation is the fact that hospital readmissions have been the most frequently measured and often primary outcome. This variable may be particularly difficult to reduce in a system where recidivists only have access to beds when they are extremely ill and are again discharged before they are completely stable [2,5].

Psychiatric services in some developing countries have had similar experiences to those of developed countries with regards to demand for in-patient services and recidivism [1,11-13]. The impact of deinstitutionalization became evident only in retrospect, and has placed a significant burden on already overburdened community services [12,14]. Community psychiatric services in South Africa are based in primary health care institutions and have to contend with a lack of resources, particularly services offering residential specialized care. In many cases these services still rely heavily on resources that are only accessible through hospital-based care. High rates of unemployment, poor social circumstances, substance abuse and high levels of violence and crime, further contribute to the unique challenge mental health services face in developing countries.

In a previous paper from our group, we found the characteristics of high frequency users (HFUs) in the South African setting to be quite similar in profile to those described in the international literature [15]. The paucity of resources was shown to be amongst the driving forces behind high frequency use, along with poor medication adherence and substance abuse. Stein et al suggested that South African clinicians should develop their own model of providing community care through strengthening of existing community structures and stressed that intensive care with small caseloads, may not be realistic in the South African setting [16].

It is against this backdrop that the state psychiatric management team in the Western Cape Province, South Africa, introduced an assertive community treatment program for each of the three regional psychiatric hospitals in an attempt to reduce demand for inpatient beds and to alleviate some of the pressure on community

psychiatric services [1]. Since the model of care provided by such teams in high income countries would not be realistic or cost-effective in the South African setting, the international model was modified to allow for larger caseloads and consequently less frequent contacts. See table 1 for comparisons between ACT teams and standard community mental health teams.

Aim

The purpose of this study was to determine the impact of a tailored, assertive treatment service on readmission rates and other measures of outcome in HFUs of psychiatric services in a developing country.

Methods

This study was conducted at Stikland Hospital, one of the three large state psychiatric hospitals in Cape Town, South Africa. The hospital, along with two others, provides inpatient services to the whole of the Western Cape Province, servicing a population of approximately 5 million people. The combined in-patient numbers for patients with severe mental illness in the three hospitals is approximately 450. The Stikland Hospital ACT Team consisted of a full-time psychiatrist, a social worker and a chief professional nurse.

All clients who presented for admission to Stikland Hospital over a pre-defined period in 2007/08 and who had a previously established, documented diagnosis of schizophrenia or schizo-affective disorder (DSM-IV-TR), were considered for inclusion [17]. In order to be included, participants had to give written, informed consent. The study was approved by the research ethics committees of both the Universities of Stellenbosch and Cape Town. The research study was conducted parallel to a service component into which patients not meeting research criteria, but with a similar pattern of high frequency use, were recruited. Research numbers therefore do not reflect overall caseloads; patients participating in the research constituted only one third of the overall caseload. Originally, the research project was intended as a multi-site project, covering the three catchment areas in the metro, but due to high turnover in staff, the study could not be completed at the other two institutions. This reduced the number of participants who were included in the study, but had the advantage that a single investigator (UB) performed all the assessments.

To be included as HFUs participants had to fulfill the full criteria as described in Additional file 2: Table S1. We utilized a modified version of Weiden's HFU-criteria adapted to local circumstances [18] (Additional file 2: Table S1). Participants were excluded if they had (1) a severe, unstable, co-morbid, medical illness (2) were unable to give written informed consent or (3) if

Table 1 Work style of ACT team compared to standard care

ACT team		Community Mental Health team
Overall patient load	80-100 patients	± 600 patients excluding assessments of new patients
Individual caseload	Maximum 35	250
Workstyle shared	Key workers act as care coordinator but caseloads are shared	Individual caseloads
Site of most visits	>50% contacts are home visits	Office based
Engagement	Assertive; focus on engagement	Non-assertive, no follow-up of missed appointments/reports of non-compliance
Working hours	Office hours	Office hours
24 hour cover coordinated by ACT	Patients referred to hospital-based after-hours service	After-hours service of catchment area
Frequency of contacts	Individualized according to patient need; fortnightly	Depends on caseloads, varies between monthly to three monthly
Disciplines available	Full-time psychiatrist, social worker, psychiatric nurse, access to psychologist, occupational therapist, dual diagnosis outpatient service	Full-time psychiatric nurse, access to social worker and psychiatrist, varied access to occupational therapist and psychologist

another co-morbid Axis I or II diagnosis, other than schizophrenia or schizo-affective disorder, was the current focus of treatment.

After inclusion, 60 participants identified as HFUs who provided informed, written consent, were randomized using standardized tables to either the intervention group or the treatment as usual group (see Figure 1).

Participants from both groups were assessed at inclusion, prior to discharge and at 12 months after inclusion. All assessments were done by a single investigator, and all data was entered into an electronic Case Report Form (eCRF). At each of these visits, the following information was gathered and rating scales administered:

Positive and Negative Symptom Scale (PANSS) [19]

Extrapyramidal symptom rating scale (ESRS) [20]

Calgary Depression Scale for Schizophrenia (CDSS) [21]

Social and Occupational Functioning Assessment Scale (SOFAS) [22]

World Health Organization Quality of Life questionnaire (WHO-QOL) [23]

Information about diagnosis, illness and medication (obtained from medical folder)

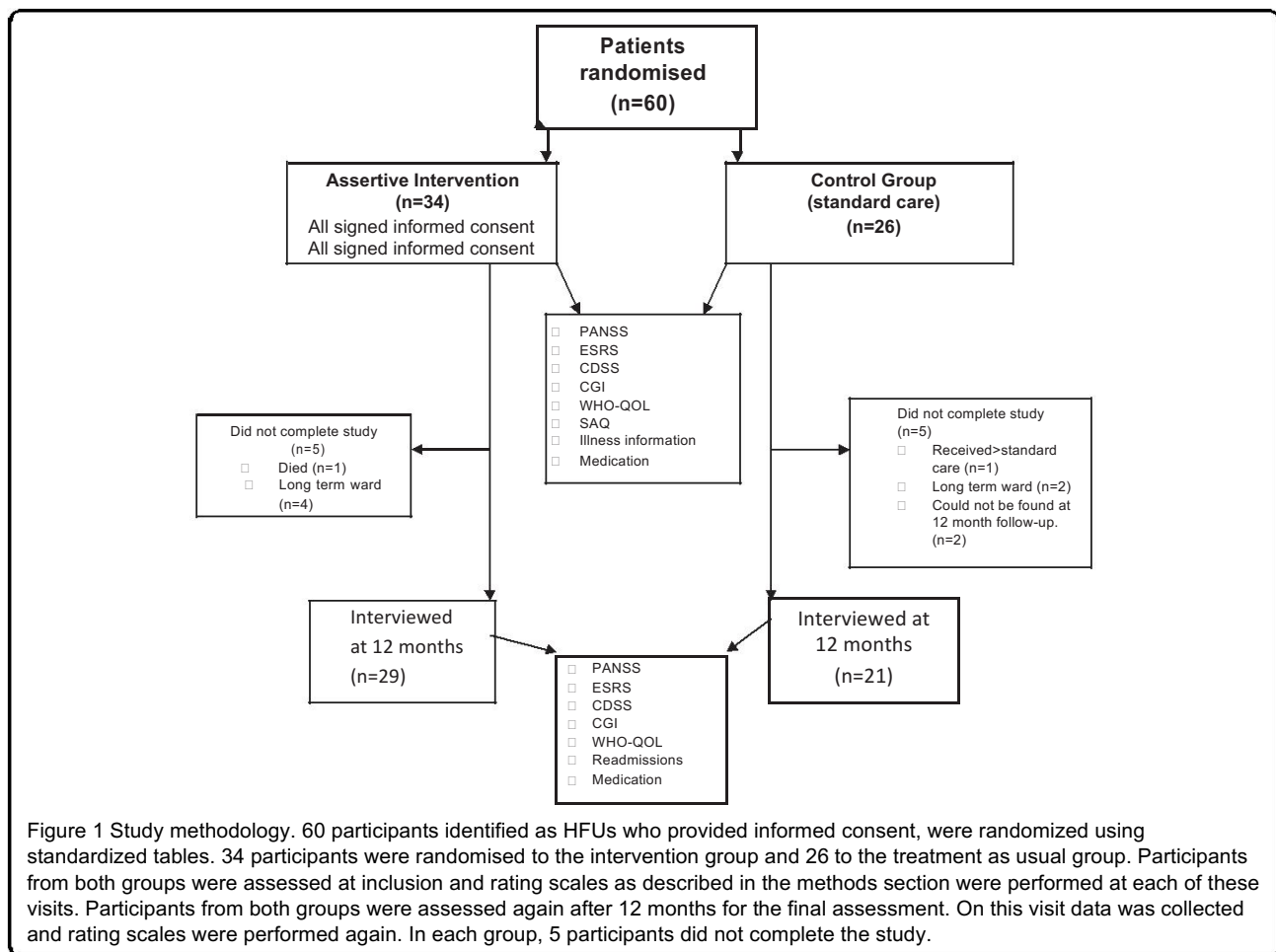
Confirmation of demographics and living arrangements

Participants from the treatment as usual group were discharged into the existing community mental health service and were only contacted again after 12 months for the final assessment. Participants from the intervention group were each assigned a key worker in the form of a senior social worker or a chief professional nurse. Key workers started engaging subjects and carers prior

to discharge, with the primary focus on building a therapeutic relationship.

The nature of the intervention was tailored as closely as possible to the international model of assertive community treatment, with the two main exceptions being the size of caseloads and frequency of visits. It was agreed at the outset that caseloads carried by international teams would not be realistic in the context of an under-resourced, developing country. (See table 1 for characteristics of team.) A consensus caseload number of 80 patients per team was reached, with individual caseloads not exceeding 35. Fidelity to the international model was assessed with the Dartmouth Assertive Community Treatment Scale (DACTS) with a total score of 3.1, indicating moderate fidelity [24]. The DACTS was developed by Teague et al as an independent scale used to assess adherence to evidence-based practices particular to assertive community treatment. The scale contains 28 program-specific items, wherein each item on the scale is rated on a 5-point scale ranging from 1 to 5 indicating the degree to which principles were implemented. The scale is accompanied by a guideline for scoring of each item. Higher scores (4-5) are indicative of high fidelity, with scores between 3 and 4 indicating moderate fidelity and those below 3, low fidelity [24].

Key workers acted as main care coordinators, but caseloads were often shared between members of the team. A major focus of the team was on engagement and maintenance of adherence to treatment. Since resources were limited, the team focused on strengthening access to existing resources in the community and building new ties with organizations that may offer additional services. Patients were frequently referred to occupational therapy and psychology services, although no full time staffing was available from these disciplines. Since there are no inpatient dual diagnosis rehabilitation



facilities in the area, patients were referred to main-stream programs when this service was required. The majority of contacts (>50%) were in the community, mainly in the form of home visits. The team was based at Stikland Hospital. This held both advantages and dis-advantages. On the one hand, the team was able to draw from the various resources in the hospital setting to strengthen the service it provided, such as access to day centres, occupational therapy assessments and coor-dination of medication issuing. One major disadvantage of the teams' location was the historical, custodial repu-tation of state institutions. The team therefore had to work harder to challenge misconceptions about its purpose.

At 12 month follow-up, information was collected about readmissions and changes in medication. Remis-sion rates were based on Andreasens' criteria [25]. Patients in the intervention group remained in the ser-vice and those in the control group were, at study end, given the option to be included in the service as well. There was no official drop-out policy and none of the

intervention patients dropped out during the course of the study.

Statistical Analysis

All data were entered into a single, electronic database. Statistical Analysis was done with Statistica version 9 software (Statsoft, Inc 2009). As some of the data was descriptive in nature, results are provided as means with standard deviations, where appropriate. Categorical variables were compared using chi-square or Fisher's exact test, where applicable. Differences in groups in terms of continuous variables were analyzed using Student's T-test. All statistical tests were two-sided and a significance level of 0.05 was used throughout.

Results

A total of 34 participants were included in the intervention arm. Five of these did not complete the study: three were never discharged during the study period and one died before study completion. The other was re-admitted within two weeks after discharge and then transferred to a long stay ward where he remained until study completion.

No data was therefore included for the first three but for the last two data from study visit 1 as well as the period they remained on the study was included. Of the 26 participants who initially consented to act as controls, 21 completed the study. Two could not be traced after 12 months, one had been seen monthly by a psychiatrist through-out the year and was therefore considered not to have received standard care. The other two were transferred to long-stay wards shortly after inclusion. Almost two thirds of patients in both groups were male and approximately the same number was unmarried. With one exception from both groups, all patients were unemployed and lived in their family home. Twenty-three intervention and nineteen control participants received disability grants. See Table 2 for detailed demographics.

Baseline scores in psychopathology were similar between the groups, except for a significantly higher mean score on the PANSS Negative Scale for the intervention group ($p = 0.01$). At 12 month follow-up, the intervention group had significantly lower scores in the subscales for PANSS positive ($p < 0.01$) and general psychopathology symptom scales ($p = 0.01$), as well as for PANSS total scores ($p = 0.02$). Also, the difference in PANSS Negative Scores was no longer significant. The mean SOFAS score was significantly higher in the

intervention group ($p = 0.02$). No significant differences were found in scores for CDSS and WHO-QOL. There was no significant difference in the use of depot medication, nor was there any significant difference in ESRS scores. Although there was a large numerical difference in the number of participants who reached remission between the two groups, this number did not reach significance. The risk for readmission was significantly higher in the control group with 10 patients ($n = 31$) in the intervention group being readmitted during the course of the year and 15 in the control group ($n = 21$). The mean number of admissions per capita for the intervention group was 0.41 and 1.19 in the control group ($p < 0.01$). The mean number of inpatient days was also significantly higher in the control group, both for psychiatric ($p = 0.02$) and non-psychiatric admissions ($p = 0.04$). (see Tables 3 & 4 for full results).

Discussion

We report on the first detailed prospective study of assertive community treatment in South Africa. Our results suggest that assertive community treatment may not only reduce readmission rates in a setting with limited resources, but may also impact on the severity of psychopathology and level of functioning [2,4-6,8].

Table 2 Demographic differences between Intervention group and Control Group

	Intervention			Control			χ^2	t-value	df	p
	Mean (\pm SD)	n	%	Mean (\pm SD)	n	%				
Age	30.55 (\pm 9.09)	31		34.81 (\pm 11.02)	21			-1.52	50	0.13
Gender	male	23	74.19		15	71.43	0.05		1	0.83
	female	8	25.80		6	28.57				
Ethnicity	mixed*	29	93.55		19	90.48	1.55		2	0.46
	black*	1	3.23		2	9.52				
	caucasian	1	3.23		0	0				
Residential area	metro**	31	100		19	90.48				0.19
	rural	0	0		2	9.52				
Education level	elementary	16	51.61		7	33.33	2.89		3	0.41
	secondary	12	38.71		10	47.62				
	\geq Gr12	3	9.68		3	14.29				
	none	0	0		1	4.76				
Marital status	single	25	80.65		16	76.19	0.95		2	0.62
	married	4	12.90		2	9.52				
	divorced	2	6.45		3	14.29				
Employment Status	unemployed	30	96.77		21	100	0.69		1	0.41
	casual***	1	3.23		0	0				
Disability grant	yes	23	74.19		19	90.48	2.14		1	0.14
	no	8	25.80		2	9.52				

*Mixed refers to participant with mixed African-Caucasian ancestry. Black refers to black African participants. **Participants who live within the city limits of the City of Cape Town.

***Participants who are employed on a part-time basis. Note that no participants were fully employed.

Table 3 Differences in clinical outcomes between Intervention group and Control Group (1)

Item		Intervention		Control		t-value	df	p
		Mean (\pm SD)	n	Mean (\pm SD)	n			
Baseline (mean)	PANNS-P total	32.29 (\pm 5.62)	31	31.43 (\pm 5.21)	21	0.56	50	0.58
	PANNS-N total	25.06 (\pm 6.82)	31	20.00 (\pm 6.80)	21	2.63	50	0.01*
	PANNS-G total	48.16 (\pm 9.21)	31	45.67 (\pm 6.37)	21	1.08	50	0.29
	PANNS-Total	105.52(\pm 18.58)	31	97.10 (\pm 15.20)	21	1.72	50	0.09
	SOFAS	34.29 (\pm 3.58)	31	36.29 (\pm 6.37)	21	-0.89	50	0.38
	CDSS	2.35 (\pm 18.58)	31	1.05 (\pm 1.47)	21	1.58	50	0.12
	ESRS-questionnaire	3.16 (\pm 2.48)	31	2.43 (\pm 2.40)	21	1.06	50	0.29
	ESRS-parkinsonism	8.84 (\pm 7.28)	31	8.81 (\pm 5.55)	21	0.02	50	0.99
Intervention (n = 31) Control (n = 21)	ESRS-dystonia	0.00 (\pm 0.00)	31	0.10 (\pm 0.44)	21	-1.22	50	0.23
	ESRS-dyskinetic	0.61 (\pm 2.38)	31	0.57 (\pm 2.62)	21	0.06	50	0.95
	PANNS-P total	12.52 (\pm 6.0)	29	19.38 (\pm 8.8)	21	-3.28	48	0.00*
	PANNS-N total	16.55 (\pm 6.1)	29	19.33 (\pm 4.6)	21	-1.76	48	0.09
	PANNS-G total	28.45 (\pm 8.2)	29	34.81 (\pm 9.1)	21	-2.58	48	0.01*
	PANNS-Total	57.52 (\pm 17.4)	29	73.52 (\pm 19.2)	21	-3.07	48	0.00*
	SOFAS	61.97 (\pm 9.1)	29	54.90 (\pm 10.8)	21	2.50	48	0.02*
	CDSS total	0.69(\pm 1.4)	29	0.81 (\pm 3.3)	21		48	0.86
Endpoint	ESRS-questionnaire	1.90 (\pm 1.23)	29	1.90 (\pm 1.51)	21	-0.02	48	0.98
	ESRS-parkinsonism	9.03 (\pm 8.20)	29	0.48 (\pm 8.07)	21	0.48	48	0.63
	ESRS-dystonia	0.00 (\pm 0.00)	29	0.00 (\pm 0.00)	21		48	
	ESRS-dyskinetic	0.55 (\pm 1.24)	29	0.57 (\pm 1.57)	21	-0.05	48	0.96
	Intervention (n = 29) Control (n = 21)							

*Significance at $p < 0.05$.

These findings appear to stand in contrast to those reported on by others in high income countries. Even though our team did not have a high fidelity as demonstrated by the DACT score, the service offered appeared to be significantly more effective than standard care in reducing readmissions and improving clinical outcomes.

The impact of assertive community treatment is likely to reside in the additional resources provided by the intervention in a poorly resourced setting. Existing community services are over-burdened with a rapidly growing population of mental health care users. Community

mental health service are hampered by staffing shortages, limited access to residential care, restricted availability of vocational rehabilitation and related service. The high demand for services is fuelled by high rates of substance abuse, the HIV epidemic, and poor social conditions. The literature on ACT indicates that assertive interventions may be more effective where community services are less comprehensive [10,26]. Ironically, it is in these exact settings, often in developing countries, where assertive interventions may not be affordable or feasible.

Table 4 Differences in clinical outcomes between Intervention group and Control Group (2)

Item		Intervention			Control			χ^2	t-value	df	p-value
		Mean (\pm SD)	n	%	Mean (\pm SD)	n	%				
Remission	yes		13	44.83		6	28.57	1.367		1	0.24
	no		16	55.17		15	71.43	7			
Readmission	yes		10	34.48		15	71.43	6.65		1	0.01*
	no		19	65.52		6	28.57				
	number readmissions	0.41(\pm 0.63)	29		1.19(\pm 0.98)	21			3.41	48	0.00*
	days in hospital (DIH)	24.69(\pm 47.43)	29		67.19(\pm 76.31)	21			-2.43	48	0.02*
	non-psychiatric DIH	0.07(\pm 0.37)	29		2.33(\pm 5.65)	21			2.16	48	0.04*

*Significance at $p < 0.05$.

Additional reasons for the positive outcome in this study include factors related to the establishment of a novel service. Sytema et al commented on the influence a newly established team may have on outcomes of a trial [5]. On the one hand, enthusiasm and motivation may be higher in a newly established team that has something to prove. On the other hand, there is the pressure of developing a new service that has never been tried before, especially in this case where the model of care has been adapted.

The positive effect of assertive community treatment in our setting is unlikely to be related to medication use and dose, since no significant differences were found between the two groups in this respect. Comparisons drawn between low frequency users (LFUs) and HFUs in the same population in the past, have shown a higher incidence in the use of depot medication in LFUs, which may improve overall compliance and prolong periods between admissions [15]. However, there was no difference in the use of depot medication between the two groups in this study at endpoint.

In addition to reduced admission rates, we also noted that participants in the intervention spent less time in hospital (referred to as days in hospital- DIH). Since the patients in the intervention group had more frequent service contacts, it is likely that intervention occurred earlier in the course of relapse and that patients from this group were therefore less severely ill on readmission than the patients in the control group. Also, patients in the intervention group had streamlined access to emergency and inpatient services, because of the involvement of the ACT team. The higher number of non-psychiatric inpatient days in the control group is probably a result of the pathways followed to admission. Due to the fact that there are limited bed vacancies at state institutions on the day admission is required, patients are often admitted to medical beds in secondary hospitals and put on a waiting list until beds become available at a psychiatric hospital. Patients in the ACT service did not follow this route, as one of the advantages of the service is the streamlined access to beds when in crisis.

One may speculate that these outcomes reflect more on the level of standard care in South Africa rather than the efficacy of the intervention offered. Also, some may question whether such a comparatively expensive intervention is an appropriate way to utilize the limited resources in developing countries. It is therefore reassuring and important to note that even with the modified caseloads and reduced frequency in contacts, significant outcomes can be produced on more than one level. This could be an indication that there may be a place for assertive community treatment strategies in developing countries, although these should be tailored to the needs and resources of the particular population

and country. Therefore, with the clinical benefits of this particular intervention already demonstrated in our setting, we believe the next logical step should be an urgent cost-benefit analysis in order to present policy makers with the data needed to support funding for a wider roll-out of this program.

Conclusion

This is the first study of its kind conducted in a developing country. The results indicate that assertive interventions in this setting need not consume resources to the degree that high income country models use to produce positive outcomes. Modified assertive interventions that focus on maintaining adherence and offering additional support may not only reduce inpatient days but also improve psychopathology in patients with severe mental illness. Standard community mental health services in developing countries often lack necessary resources and funding to provide comprehensive care to the severely ill, HFU patient. Ways should be explored in which traditional assertive models of care can be adapted within the financial constraints of limited budgets, while still retaining the core features necessary to bring about change.

Limitations

This was an unblinded study, with all the inherent risks involved when this kind of methodology is used. Due to high staff turnover at other sites, numbers of subjects recruited were lower than expected, and from a single site only which could limit generalizability. The ethnic distribution in this sample is not representative of the entire population of the country, since the study was conducted in an area where the predominant ethnic representation is that of mixed race. Ideally, outcomes should be measured for longer than 12 months since some clinical outcomes may change over time.

Additional material

Additional file 1: Key Elements of ACT. Contains description of core elements defining Assertive Community Treatment as defined by Burns et al. This model was adapted from the original PACT model described by Stein and Test in 1992.

Additional file 2: Table S1. Modified Weiden's criteria for differentiating high frequency (HFU) and low frequency (LFU) schizophrenia-spectrum disorder users of psychiatric services.

Declaration of competing interests

The authors declare that they have no competing interests.

Authors' contributions

All authors conceived of and designed the study. UB acquired the data. PO performed the statistical analysis. UB prepared the first draft of the manuscript and PO and LK made significant contributions to the final draft. All authors read and approved the final manuscript.

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References

- Botha U, Koen L, Oosthuizen P, Joska J, Hering L: Assertive community treatment in the South African context. *Afr J Psychiatry (Johannesbg)* 2008, **11**:272-275.
- Killaspy H, Kingett S, Bebbington P, Blizard R, Johnson S, Nolan F, Pilling S, King M: Randomised evaluation of assertive community treatment: 3-year outcomes. *Br J Psychiatry* 2009, **195**:81-82.
- Marshall M, Lockwood A: Assertive community treatment for people with severe mental disorders. *Cochrane Database Syst Rev* 2000, CD001089.
- Smith L, Newton R: Systematic review of case management. *Aust N Z J Psychiatry* 2007, **41**:2-9.
- Sytema S, Wunderink L, Bloemers W, Roorda L, Wiersma D: Assertive community treatment in the Netherlands: a randomized controlled trial. *Acta Psychiatr Scand* 2007, **116**:105-112.
- Essock SM, Mueser KT, Drake RE, Covell NH, McHugo GJ, Frisman LK, Kontos NJ, Jackson CT, Townsend F, Swain K: Comparison of ACT and standard case management for delivering integrated treatment for co-occurring disorders. *Psychiatr Serv* 2006, **57**:185-196.
- Burns T, Firth M: *Assertive Outreach in Mental Health: a manual for practitioners*. Oxford university press 2002. Oxford University Press 2002.
- Hangan C: Introduction of an intensive case management style of delivery for a new mental health service. *Int J Ment Health Nurs* 2006, **15**:157-162.
- Lambert M, Bock T, Schottle D, Golks D, Meister K, Rietschel L, Bussopolos A, Frieling M, Schodlbauer M, Burlon M, Huber CG, Ohm G, Pakrasi M, Chirazi-Stark MS, Naber D, Schimmelmann BG: Assertive community treatment as part of integrated care versus standard care: a 12-month trial in patients with first- and multiple-episode schizophrenia spectrum disorders treated with quetiapine immediate release (ACCESS Trial). *J Clin Psychiatry* 2010.
- Burns T: End of the road for treatment-as-usual studies? *Br J Psychiatry* 2009, **195**:5-6.
- Gastal FL, Andreoli SB, Quintana MI, Almeida GM, Leite SO, McGrath J: Predicting the revolving door phenomenon among patients with schizophrenic, affective disorders and non-organic psychoses. *Rev Saude Publica* 2000, **34**:280-285.
- Lazarus R: Managing de-institutionalization in a context of change: The case of Gauteng, South Africa. *S Afr Psychiatry Rev* 2005;8:65-69. *South African Psychiatry Review* 2005, **8**:65-69.
- Patel V, Araya R, Chatterjee S, Chisholm D, Cohen A, De Silva M, Hosman C, McGuire H, Rojas G, van Ommeren M: Treatment and prevention of mental disorders in low-income and middle-income countries. *Lancet* 2007, **370**:991-1005.
- Singh BS, Castle DJ: Why are community psychiatry services in Australia doing it so hard? *Med J Aust* 2007, **187**:410-412.
- Botha UA, Koen L, Joska JA, Parker JS, Horn N, Hering LM, Oosthuizen PP: The revolving door phenomenon in psychiatry: comparing low-frequency and high-frequency users of psychiatric inpatient services in a developing country. *Soc Psychiatry Psychiatr Epidemiol* 2010, **45**:461-468.
- Stein DJ, Allwood C, Emsley RA: Community care of psychiatric disorders in South Africa—lessons from research on deinstitutionalization. *S Afr Med J* 1999, **89**:942-943.
- American Psychiatric Association: *The diagnostic and statistical Manual of Mental Disorders, Fourth edition, Text revision, (DSM-IV-TR)*. American Psychiatric Press, Washington DC 2000.
- Weiden P, Glazer W: Assessment and treatment selection for "revolving door" inpatients with schizophrenia. *Psychiatr Q* 1997, **68**:377-392.
- Kay SR, Fiszbein A, Opler LA: The positive and negative syndrome scale (PANSS) for schizophrenia. *Schizophr Bull* 1987, **13**:261-276.
- Chouinard G, Margoless HC: Manual for the Extrapyramidal Symptom Rating Scale (ESRS). *Schizophr Res* 2005, **76**:247-265.
- Addington D, Addington J, Maticka-Tyndale E: Assessing depression in schizophrenia: the Calgary Depression Scale. *Br J Psychiatry Suppl* 1993, **39**:44.
- Morosini PL, Magliano L, Brambilla L, Ugolini S, Pioli R: Development, reliability and acceptability of a new version of the DSM-IV Social and Occupational Functioning Assessment Scale (SOFAS) to assess routine social functioning. *Acta Psychiatr Scand* 2000, **101**:323-329.
- Kusel Y, Laughame R, Perrington S, McKendrick J, Stephenson D, Stockton-Henderson J, Barley M, McCaul R, Burns T: Measurement of quality of life in schizophrenia: a comparison of two scales. *Soc Psychiatry Psychiatr Epidemiol* 2007, **42**:819-823.
- Teague GB, Bond GR, Drake RE: Program fidelity in assertive community treatment: development and use of a measure. *Am J Orthopsychiatry* 1998, **68**:216-232.
- Andreasen NC, Carpenter WT Jr, Kane JM, Lasser RA, Marder SR, Weinberger DR: Remission in schizophrenia: proposed criteria and rationale for consensus. *Am J Psychiatry* 2005, **162**:441-449.
- Tyrer P: The future of specialist community teams in the care of those with severe mental illness. *Epidemiol Psychiatr Soc* 2007, **16**:225-230.

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Chapter 4

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RESEARCH ARTICLE

Open Access

The rise of assertive community interventions in South Africa: a randomized control trial assessing the impact of a modified assertive intervention on readmission rates; a three year follow-up

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Abstract

Background: Many countries have over the last few years incorporated mental health assertive interventions in an attempt to address the repercussions of deinstitutionalization. Recent publications have failed to duplicate the positive outcomes reported initially which has cast doubt on the future of these interventions. We previously reported on 29 patients from a developing country who completed 12 months in an assertive intervention which was a modified version of the international assertive community treatment model. We demonstrated reduction in readmission rates as well as improvements in social functioning compared to patients from the control group. The obvious question was, however, if these outcomes could be sustained for longer periods of time. This study aims to determine if modified assertive interventions in an under-resourced setting can successfully maintain reductions in hospitalizations.

Methods: Patients suffering from schizophrenia who met a modified version of Weidens' high frequency criteria were randomized into two groups. One group received a modified assertive intervention based on the international assertive community treatment model. The other group received standard care according to the model of service delivery in this region. Data was collected after 36 months, comparing readmissions and days spent in hospital.

Results: The results demonstrated significant differences between the groups. Patients in the intervention group had significantly less readmissions ($p = 0.007$) and spent less days in hospital compared to the patients in the control group ($p = 0.013$).

Conclusion: Modified assertive interventions may be successful in reducing readmissions and days spent in hospital in developing countries where standard care services are less comprehensive. These interventions can be tailored in such a way to meet service needs and still remain affordable and feasible within the context of an under-resourced setting.

Keywords: Assertive interventions, Developing countries, Readmission rates, Days in hospital

Background

Assertive Community Treatment (ACT) is by now a well-known approach that has been adopted in many countries [1-3]. Initially, one of the most attractive motivators for the incorporation of this approach in mental health service delivery, was its apparent success in reducing readmission rates in so-called revolving door patients. Though considered an expensive intervention, the costs were

justified under the premise that inpatient costs were generally much higher. The approach has been well researched and tested over the last twenty years, with many countries reporting on a range of outcomes, such as readmission rates, patient satisfaction, degrees of symptomatology and social functioning [4-6,3,2,7]. Initial studies from particularly the US and Australia, reported positive outcomes in most of these areas, which prompted UK decision makers to launch 300 Assertive Outreach teams nationwide [1-3]. Though some UK studies initially demonstrated favourable outcomes, few studies reported reduction in readmission rates. A number of recent UK

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studies have demonstrated no benefit from ACT interventions compared with the CMHT control groups and have concluded that the approach may no longer be justifiable, considering the cost [1,8]. The discrepancy in findings by different research groups and countries has created considerable controversy [1,9,10].

Burns et al. performed a meta-regression with 64 trials in an attempt to identify factors that may contribute to outcomes. They found that a high baseline "days in hospital" (DIH) was often associated with higher reduction and that teams with high fidelity to the ACT model, also appeared to have lower readmission rates. One of the common criticisms has been that control groups have been poorly defined [1]. Clearly, "standard care" or "treatment as usual" is quite non-specific, as standard care services vary considerably within countries and even more so between countries. Several of the studies that demonstrated no significant improved outcomes, reported that the standard care services appeared to have incorporated many of the salient features of the ACT approach, such as fixed caseloads (though larger than those in ACT), home visits and assertive follow-up [11,12]. One study even reported a standard care service with a higher fidelity score than the ACT group it was being compared with [13].

Despite the apparent downfall of the ACT approach in the UK, it is still being employed with success in other countries. A recent German study in Hamburg demonstrated reduced inpatient days in patients followed-up assertively for 12 months and concluded that the intervention was more cost-effective than the standard care service it was compared with. Though outpatient costs had been higher in the intervention group, the total cost was still lower due to the significantly more expensive inpatient costs [6]. Similarly, a recent Danish study demonstrated patients receiving an assertive intervention for two years, had less substance use, better adherence to medication and were more satisfied with their treatment. In addition to this, they also reported significantly lower usage of inpatient services compared to the control group [5].

Developing countries face the same challenges of revolving door patients and bed pressures, but have the additional burden of limited resources and lack of funding to contend with. Hanlon et al. reported that only 56.5% of African countries have community-based mental health services and only 50% have existing mental health policies [14]. One of the important recommendations from this publication was the need for strengthening of specialist mental health services and further integration of mental health service with primary health service. Patel et al. called for scaling up of cost-effective community based mental-health services in middle and low-income countries citing successes in countries such as India, Chile

and China, where interventions had been modified to meet the resources and needs of the community [15]. Odenwald et al. reported on such an intervention in Somalia, which offered a 10 month programme to a group of 35 outpatients with chronic psychotic disorders. The intervention was a home-based programme which incorporated psycho-education, relapse prevention and family support and was found to be cost-effective and feasible in a low-income country [16].

In South-Africa, similar attempts have been made to address the challenges in finding a cost-effective community-based initiative. As part of a provincial initiative, the Western Cape Province launched three Assertive Community Treatment (ACT) teams in 2007. The teams followed a modified version of the ACT model, particularly in terms of case loads and visit frequency. We reported that at the one year follow-up the patients who completed the intervention demonstrated significant reduction in days spent in hospital and improvements in social functioning in comparison to patients receiving the standard care service package. Though the follow-up period was only 12 months, these were the first indicators that assertive interventions could be successfully modified to meet the needs of under-resourced areas without compromising the efficacy of the intervention [17]. This supports past comments by international authors [1,18] that assertive interventions may be more effective in under-resourced areas where standard care services are less comprehensive.

The important question, however, remains whether positive outcomes can be sustained over time. It is well-known that newly established services may initially have good outcomes due to staff enthusiasm and initial smaller caseloads, but that these outcomes often tail off over time as burn-out ensues and pressure rises [11].

Aim

The purpose of this study was to determine if modified assertive interventions in an under-resourced setting can successfully maintain reductions in hospitalizations over a 36 month follow-up period.

Methods

This study was conducted in Stikland Hospital, one of the three large state mental health hospitals in Cape Town, South Africa. The hospital, along with two others, provides inpatient services to the whole of the Western Cape Province covering a population of approximately 5 million people. The combined bed capacity for acute psychotic patients in the three hospitals is 500. The Stikland Hospital ACT team initially consisted of a full-time psychiatrist, a social worker and a chief professional nurse, but has been expanded over time. Currently the team consists of a medical officer, a social worker, three

chief psychiatric nurses and a psychiatrist. The team has access to an occupational therapist, a dual diagnosis service and a PSR-based day program.

All subjects who presented for admission over an eighteen month period and who had a previously established, documented diagnosis of schizophrenia or schizo-affective disorder (DSM-IV-TR) were eligible for inclusion. To be included as high frequency users (HFUs), subjects had to fulfil the inclusion criteria, which was modified from Weiden's HFU-criteria (see List of criteria below) to accommodate local admission patterns and ensure the appropriate service users were targeted [19]. Subjects were excluded if they had (1) a serious, unstable co-morbid medical illness that could interfere with their ability to participate in the intervention; (2) were unable to give written informed consent or (3) if another co-morbid Axis I or II diagnosis other than schizophrenia or schizo-affective disorder was the current focus of treatment.

List of criteria: Modified Weiden's criteria for differentiation high frequency (HFU) and low frequency (LFU) schizophrenia-spectrum disorder users of psychiatric services:

General criteria

1) Schizophrenia or Schizo-affective Disorder

- ☐ Age 18–59 years (extremes included)
 - ☐ Needs current treatment with antipsychotic
- Must meet General Criteria PLUS either (A) or (B) or (C) to be included
- ☐ ≥ 3 admissions in 18 months/ ≥ 5 in 36 months
 - ☐ ≥ 2 admissions in 12 months AND treated with clozapine
 - ☐ ≥ 2 admissions in 12 months AND ≥ 120 days in hospital

HFUs had to fulfill General Criteria PLUS one of A; B or. The study was approved by the research ethics committees of both the Universities of Stellenbosch and Cape Town. The research component constituted approximately half of the caseload of the ACT team whereas a non-research component provided the same intervention to high frequency users (HFUs) with other diagnoses. Research numbers therefore do not reflect overall caseloads. The trial took the form of a randomized, non-blinded parallel group study. Subjects ($n = 65$) identified as HFUs who provided informed, written consent, were considered for inclusion.

Randomization was done using standardized tables, patients were allocated to one of two treatment groups (See Figure 1).

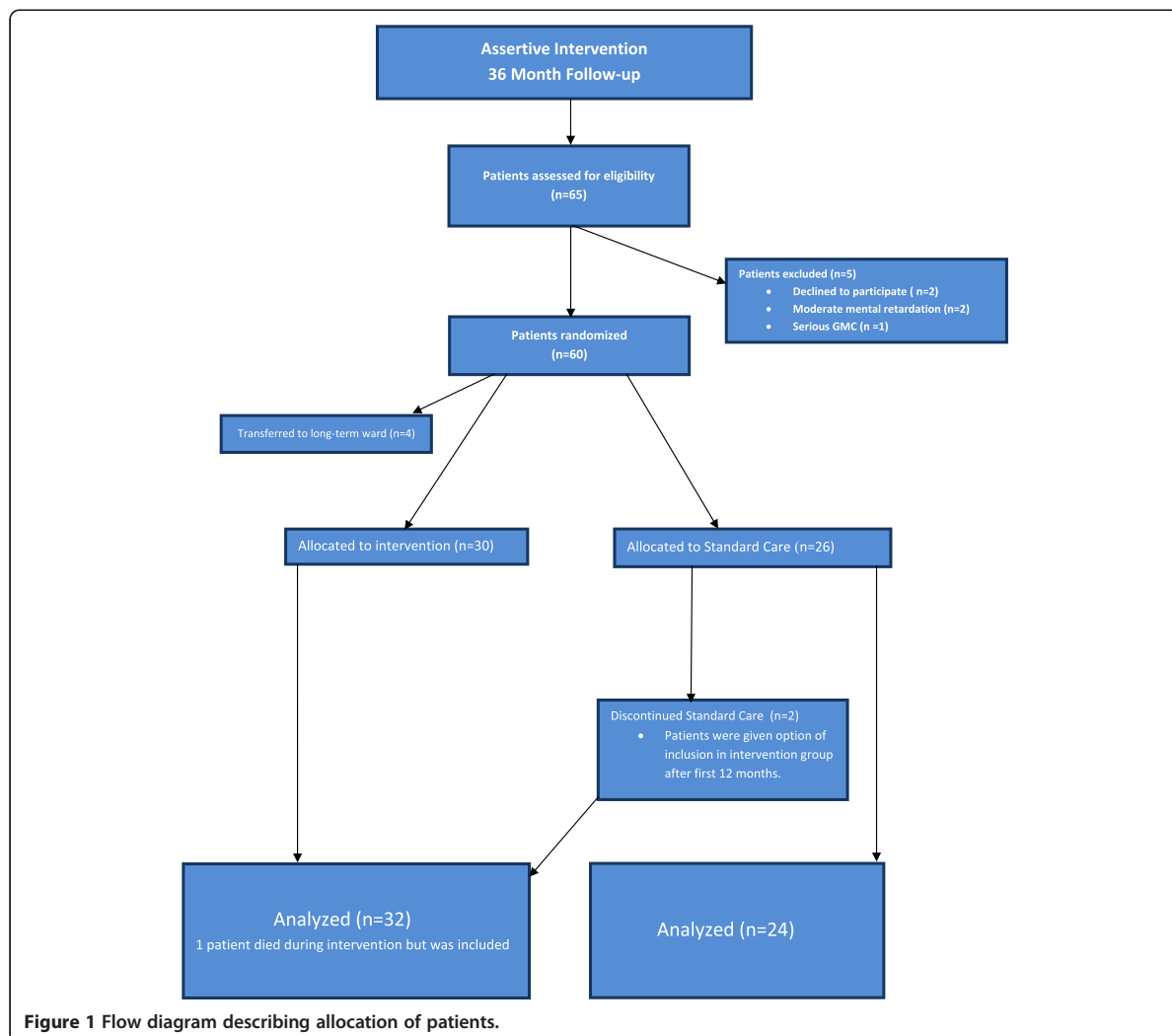
Subjects from both groups, a) treatment as usual ($n = 26$) and b) Intervention group ($n = 34$), received visits at inclusion, prior to discharge and after 12 months. At 36 month follow-up, data was collected from patient folders or from patients directly where no readmissions

had been documented. The same method was used for both groups to obtain readmission information. Admissions data is easily accessible on the provincial data systems and also indicates admissions to other hospitals in the province. Where no readmissions were documented, patients or families were contacted to rule out any out of area admissions or adverse events. Where patients or families could not be reached, the community mental health practitioner was contacted to obtain information. Information was collected about number of readmissions, number of days spent in hospital at each admission, months in service (control or intervention respectively), number of days until first admission, number of admissions to intermediate care facility, adverse events and demographics were confirmed. Data was collected over a 72 month period; 36 months prior to date of inclusion (pre-DOI) and 36 months post -date of inclusion (post-DOI).

Subjects from the treatment as usual group were discharged into the existing standard care system. At 36 month follow-up data was collected from subject files and directly from subjects where files did not provide sufficient information.

Subjects from the intervention group were each assigned a key worker in the form of a senior social worker or a chief professional nurse. Key workers started engaging subjects and carers prior to discharge with the primary focus on building a therapeutic relationship.

The nature of the intervention was tailored as close as possible to the international model of assertive community treatment, with the two main exceptions in the size of caseloads and frequency of visits. It was agreed at the onset that the caseloads carried by international teams would not be realistic in the context of a pressured system in an under-resourced developing country. A consensus of 80 patients per team was reached, with individual caseloads not exceeding 35. Fidelity to the international model was assessed with the Dartmouth Assertive Community Treatment Scale (DACTS) with a total score of 3.1 [20]. Key workers acted as main care coordinators but caseloads were often shared between members of the team. A major focus in the team was on engagement and maintaining compliance on medication. The team also attempted to make use of existing resources in the community in addition to the service provided by the team. This may be considered a minor deviation from the ACT model where care is coordinated solely by the ACT team, but may be a practical option where teams need to spread themselves thinly. Frequency of patient contacts was individualized according to patient need with minimum of fortnightly contacts by any member of the team. Patients had access to occupational therapy and psychology services although no full-time staff was available from these disciplines. The majority of contacts ($>50\%$) were in the community, mainly home visits.



The team was based at Stikland Hospital, one of the three state mental hospitals in the Western Cape. This had both advantages and disadvantages since the team was able to draw from the various resources in the hospital setting to strengthen the service it provided, such as access to a day programme offering psycho-social rehabilitation. The team also acted as bridge between hospital-based care and community mental health services, offering valuable liaison and streamlining communication between services. Readmissions were treated like adverse events; the team would liaise with inpatient staff and commence follow-up of patient upon discharge without any change to the follow-up period. Incarcerations were not considered in the same manner as admissions, since incarceration does not necessarily imply that appropriate psychiatric care is given. One intervention patient was incarcerated during the 36 month period but the team continued to perform

visits in prison. One patient from the control group had been incarcerated during the 36 month period.

Patients in this catchment area have access to an intermediate rehabilitation facility. This unit functions as a step-up/step-down facility and offers a psycho-social rehabilitation (PSR) program. Data was collected separately on the number of patients who attended this program since this may impact on readmission rates. Patients from both groups had access to the facility but these admissions were not considered in the same way as admissions to the acute wards.

At 12 month follow-up, additional information was collected about readmissions and any changes in medication. Patients in the intervention group remained in the service and those in the control group were given the option to be included in the intervention group. Subsequently, two patients from the control group were

included in the intervention group and completed a 36 month follow-up period. There was no official drop-out policy and none of the intervention patients dropped out during the first 12 months of the study. Two patients from the intervention group were discharged after 14 and 16 months of follow-up respectively. In both instances patients had been following up in the community for longer than six months without concerns about compliance or indications of relapse. Both patients had been well integrated with their respective community services and appeared no longer to require assertive input. One patient died after two months in the study. Time to readmission for this person was censored at time of death. Four patients who signed informed consent initially were referred to long-term wards (See Figure 1). Patients who were referred to long-term wards prior to their index visit were excluded. Patients who were re-admitted and referred to long-term wards after a period of follow-up, were not excluded and DIH were included for analysis. Both groups were considered in the same way. Service contacts were not measured for the control group. The spectrum of standard care is very diverse and contacts are often infrequent, depending on which particular community service patients made use of. (See Table 1 for comparisons of care received between the two groups).

Statistical analysis

Data was summarised through counts (n) and frequencies (%), medians and interquartile ranges (IQR) or means and standard deviations (sd). Wilcoxon Mann–Whitney Rank Sum tests (non-parametric) were used to test median differences while the T-test was used to test differences in means for normally distributed data. Fisher tests of association were used for count data.

Time to readmission was considered as the number of days to first admission after discharge, and was used as the outcome variable in the Survival analyses methods employed. Patients who completed a 36 month follow-up without readmissions were “censored” since their readmission history is not known beyond the end of the study. For Kaplan-Meier methods, data was assumed to be right-censored. To statistically test whether or not there is a difference in time to readmission between the cases and controls, and to test for covariates in the model, a Cox proportional hazards regression was carried out. The Cox regression model is a non-parametric model which assumes that the hazard rate is proportional. This assumption was tested graphically and using goodness-of-fit tests and found to be valid. Hazard ratios were calculated from the results of the regression. Since the effect of group membership on readmission was of interest, separate curves were produced so that they could be compared graphically. All statistical analyses were carried out using the package R: A Language for Data Analysis and Graphics [21].

Results

Data were analyzed for 32 patients in the (cases) intervention group and 24 patients in the control group. The baseline demographics from both groups confirmed the homogeneity of the group for all demographic variables, except place of residence (Fisher’s test p-value = 0.01), at a 5% level of significance (Table 2). There was no missing data; all patients were successfully located at 36 month follow-up. The median age of the control group was 27.5 Years (IQR = (23.8, 36.8) years) and that for the cases was 32.0 years (IQR = (26.8, 42.8) years). To test this difference, the nonparametric Wilcoxon Mann–Whitney Rank Sum test was used and showed the difference was

Table 1 Work style of modified ACT team compared to standard care

Modified ACT team		Community mental health team
Overall patient load	80-100 patients	± 600 patients excluding assessments of new patients
Individual caseload	Maximum 35	250
Workstyle	Key workers act as care coordinator but caseloads are shared	Individual caseloads
Site of most visits	>50% contacts are home visits	Office based
Engagement	Assertive; focus on engagement, immediate response to non-compliance	Non-assertive, no follow-up of missed appointments/ reports of non-compliance
Working hours	Office hours	Office hours
24 hour cover	Patients referred to hospital-based after-hours service coordinated by ACT when in crisis.	After-hours service of catchment area.
Frequency of contacts	Individualized according to patient need at least fortnightly	Depends on caseloads, varies between monthly to three monthly.
Disciplines available	Full-time psychiatrist, social worker, Psychiatric nurse, access to psychologist, occupational therapist, dual diagnosis service.	Full-time psychiatric nurse, access to social worker and psychiatrist, varied access to occupational therapist and psychologist.

Table 2 Demographic differences between cases and controls

		Cases	Controls	Total
Gender	Male	22 (69)	19 (79)	41 (73)
	Female	10 (31)	5 (21)	15 (27)
	Total:	32 (100)	24 (100)	56 (100)
Ethnicity	Caucasian	1 (3)	0 (0)	1 (2)
	Coloured	30 (94)	21 (88)	51 (91)
	Xhosa	1 (3)	3 (13)	4 (7)
	Total:	32 (100)	24 (100)	56 (100)
Marital status	Single	27 (84)	18 (75)	45 (80)
	Married	3 (9)	2 (8)	5 (9)
	Divorced	2 (6)	4 (17)	6 (11)
	Total:	32 (100)	24 (25)	56 (100)
Language	Afrikaans	29 (94)	21 (88)	50 (91)
	English	1 (3)	0 (0)	1 (2)
	Xhosa	1 (3)	3 (13)	4 (7)
	Total:	31 (100)	24 (100)	55 (100)
Employment	Unemployed	31 (97)	24 (100)	55 (98)
	Casual	1 (3)	0 (0)	1 (2)
	Total:	32 (100)	24 (100)	56 (100)
Residence**	Metro	32 (100)	19 (79)	51 (91)
	Rural	0 (0)	5 (21)	5 (9)
	Total:	32 (100)	24 (100)	56 (100)
Accommodation	Family	32 (100)	24 (100)	56 (100)
	Total:	32 (100)	24 (100)	56 (100)
Highest Level of Education	Elementary	14 (44)	5 (21)	19 (34)
	Secondary	14 (44)	14 (58)	28 (50)
	Matric	4 (13)	4 (17)	8 (14)
	None	0 (0)	1 (4)	1 (2)
	Total:	32 (100)	24 (100)	56 (100)
Adverse events	None	30 (94)	24 (100)	54 (96)
	Pregnancy	1 (3)	0 (0)	1 (2)
	Death	1 (3)	0 (0)	1 (2)
	Total:	32 (100)	24 (100)	56 (100)
Status changes	No change	27 (84)	20 (83)	47 (84)
	Discharge from Intervention	2 (6)	0 (0)	2 (4)
	Included in Intervention	2 (6)	4 (17)	6 (11)
	Death	1 (3)	0 (0)	1 (2)
	Total:	32 (100)	24 (100)	56 (100)
Disability grant	Yes	28 (88)	22 (92)	50 (89)
	No	4 (13)	2 (8)	6 (11)
	Total:	32 (100)	24 (100)	56 (100)

**Significant difference detected (Fisher's test: p-value = 0.01).

not statistically significant (p-value = 0.253). See Table 3 for comparisons between the two groups with regards to days spent in hospital (DIH) and number of admissions

pre-and-post inclusion. When comparing days spent in hospital in the 36 months prior to inclusion (pre-DOI) in this study (Table 3), no significant difference was

Table 3 Summary - days in hospital and number of admissions, for each group

Cases n = 32; controls n = 24		Mean (SD)	% of n with admissions	
Days in hospital				
Pre-date of inclusion	Cases	264.8 (108.0)	100%	
	Controls	261.5 169.8)	100%	
Post-date of inclusion	Cases	35.2 (64.4)	40.60%	
	Controls	51.5 (219.2)	75%	
Pre-Post date of inclusion	Cases	229.7 (130.2)		
	Controls	110 (187.6)		
		Median (IQR)	Wilcoxon test	
			Estimate (CI)	p-value
Pre-date of inclusion	Cases	256.0 (174.2, 319.2)	27 (-38, 92)	0.376
	Controls	202.0 (152.8, 311.5)		
Post-date of inclusion	Cases	0.0 (0.0, 52.0)	-53 (-96, -6)	0.002
	Controls	88.0 (6.8, 161.2)		
Pre-Post date of inclusion	Cases	230.0 (147.8, 314.8)	93 (24, 177)	0.013
	Controls	130.0 (57.8, 235.0)		
Cases n = 32; controls n = 24		Mean (SD)		
Number of admissions				
Pre-date of inclusion	Cases	4 (1.8)		
	Controls	4 (1.5)		
Post-date of inclusion	Cases	1.5 (0.8)		
	Controls	2 (1.3)		
Pre-Post date of inclusion	Cases	4 (2)		
	Controls	2 (1.8)		
		Median (IQR)	Wilcoxon test	
			Estimate (CI)	p-value
Pre-date of inclusion	Cases	4.0 (3.0, 5.0)	0 (0, 1)	0.515
	Controls	3.0 (3.0, 4.0)		
Post-date of inclusion	Cases	0.0 (0.0, 1.0)	-1 (-2, 0)	0.001
	Controls	2.0 (0.8, 2.3)		
*Pre-Post date of inclusion	Cases	3.56 (2.0)	1.4 (0.4, 2.5)	0.007
	Controls	2.13 (1.8)		

*Summarised using mean (sd).

found between the two groups (p-value = 0.376). For the post date of inclusion data (post-DOI), there was a significant difference between the cases and controls (p-value = 0.002). To compare the pre and post-DOI data of the two groups, the difference was calculated as pre-DOI minus post-DOI number of days in hospital for each group separately. A Wilcoxon Mann-Whitney rank sum test on this data yielded a p-value of 0.013, indicating a significant difference between the two groups. However, the large confidence interval (CI = (24,177)) indicates lack of precision in the estimation, which is likely due to a patient in the control group with a long length of stay post-DOI. The Wilcoxon test was re-peated without this patient and yielded a p-value of

0.023 (CI = (15, 163)). Thus, one can still conclude that there is a statistically significant difference between the pre-minus post-DOI days in hospital between the two groups.

Table 3 also summarizes the number of readmissions for each group. The difference between the groups is again demonstrated using pre-DOI number of admissions minus post-DOI number of admissions. This data was normally distributed thus a t-test was used to demonstrate a difference in the means. It gave a p-value of 0.007, which indicates a significant difference in the mean pre-minus post-DOI admissions between cases and controls.

There was no significant difference between the two groups in terms of admissions to the intermediate

rehabilitation facility (Fisher test p -value = 0.543). Of note was that though the number of admissions was the similar ($n = 5$ for controls, $n = 6$ for cases) in both groups, the intervention group had two patients with more than one admission to the facility, whereas all patients admitted from the control group had single admissions to the facility (See Table 4).

To compare the readmission experience of cases and controls, Kaplan-Meier (K-M) Survivor Curves were plotted separately for each group (not shown). Two patients were censored; one patient died two months into the study (case) and another was included much later than other patients (control). The K-M plot clearly demonstrated that in the first 200 days there was little difference between the two groups but after 200 days, the controls were more likely to be readmitted. The curves also moved further apart over time, indicating that the intervention became more beneficial over time. The K-M curves do not provide statistical evidence of a significant difference. To demonstrate this, the log-rank test was applied and gave a p -value of 0.027, which demonstrated a statistically significant difference between the readmission rates of the two groups. However, we cannot adjust for covariates using a log-rank test so a Cox Proportional Hazards model was carried out where age, gender, number of admissions pre-DOI and days in hospital pre-DOI were all adjusted for (Table 5). After adjusting for these factors, the model gave a hazard ratio of 3.0 (CI = (1.4, 6.7)), indicating a significant difference between admission experience of the cases and controls. A hazard ratio of 3.0 indicates that being in the control increases your hazard of readmission three-fold, on average. Figure 2 shows a plot of this model with separate curves for the cases and controls. Censored patients are represented by the crosses on the curves.

Discussion

Reductions in readmission rates are widely accepted to be an effective way to assess outcome of assertive interventions and are often used as primary outcome [3]. One criticism against this method has been that this outcome may have large appeal to managers due to cost-implications and may not necessarily reflect a positive

Table 4 Summary of admissions to intermediate rehabilitation facility

Number of admissions to rehab facility	Cases n (%)	Controls n (%)	Total n (%)
0	27 (84)	19 (79)	46 (82)
1	3 (9)	5 (21)	8 (14)
2	1 (3)	0 (0)	1 (2)
3	1 (3)	0 (0)	1 (2)
Total	32 (100)	24 (100)	56 (100)

Table 5 Estimated hazard ratios from a Cox regression model

	Hazard ratio (95% CI)
Group	2.43 (1.06, 5.57)
Gender	1.15 (0.46, 2.84)
Age	0.98 (0.94, 1.03)
Days in hospital pre-DOI	1.00 (1.00, 1.00)
Number of admissions pre-DOI	1.02 (0.77, 1.35)

outcome for patients. However, combining this outcome with length of stay (and measurements in degrees of psychopathology) provide the necessary reassurances that the outcomes are not simply being produced by denying patients access to necessary care, but that the intervention actually reduces the need for admission [1,3,17].

The results indicate that the reduction in inpatient days that has been previously reported on, can indeed be sustained in the long run. This was considered one of the limitations of the original 12 month follow-up, since there are several factors that may contribute to short-term outcomes [17]. Both Sytma and Killaspy reported on the fact the newly established teams may initially produce positive outcomes that could tail off over time [8,11]. Newly established teams often start off with high staff enthusiasm and pressure to succeed and depending on the recruitment style, initial caseloads may be smaller than anticipated. Once caseloads increase and the novelty of the approach wears off, staff may have less time for as frequent and comprehensive input and could possibly be less likely to “go the extra mile”, so to speak. Also, since most patients were included in the service directly after an

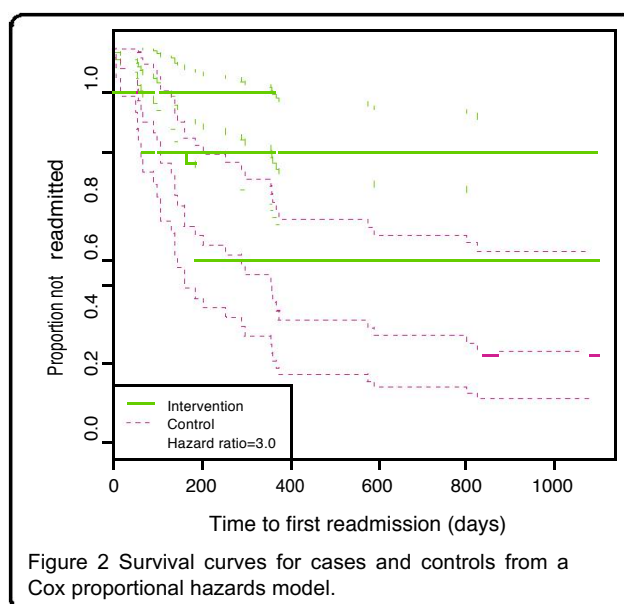


Figure 2 Survival curves for cases and controls from a Cox proportional hazards model.

admission, one may speculate that this would reduce the number of readmissions in 12 months in itself. In addition to this, global pressures on inpatient beds mean that patients generally have to be quite ill in order to warrant admission, which in turn means that patients who are not behaviourally disturbed and pose less of a risk, may be managed in the community. These factors necessitate the use of a control group to adequately assess the effectiveness of such an intervention.

Demonstrating sustained reduction in readmissions over a 36 month period, means that the “new team” factor is less likely to contribute. By 18 months, all key workers were managing case loads of approximately 30 patients or more. In addition to this, one may speculate that having successfully demonstrated significantly reduced days in hospital, the team may have felt less pressured to sustain the level of input that had been given thus far. Surely, if “new team” enthusiasm and pressure to succeed may contribute to a teams’ ability to produce positive outcomes, the lack thereof may be expected to have the opposite effect. This was not the case however, despite the team experiencing other typical phenomenon described by established teams, such as staff-burn-out.

Days to first admission reflects the number of days from initial inclusion to first readmission. This does not necessarily reflect how stable the patients were during this time. Previous publications by our group have demonstrated higher degrees of symptomatology in the control group [17]. Clinical experience has shown that patients followed-up in a standard care setting, are seen less frequently by mental health practitioners and are often left to cope with significantly higher degrees of symptomatology prior to admission. Also, their access to inpatient services may be less streamlined than that of patients followed-up in an assertive intervention, where staff often facilitates admissions directly. This would contribute to the mean duration of stay which has been shown to be significantly longer in controls than in the intervention group. Another contributing factor in this regard, may be the fact that the particular inpatient units these patients had access to are continuously under significant pressure, with a crisis discharge policy often prompting early discharges to create beds for patient who are more ill. However, it is likely that patients who are followed-up by an intervention service may be less likely to be discharged early, since their key workers may intervene on their behalf and request that they be optimally stabilized.

It is important to note that the intervention group still had 18 readmissions. Keeping in mind that all patients met a HFU criteria at inclusion, it is inevitable that some patients will require readmission no matter how effective and comprehensive the intervention is and that the aim is not to avoid readmission at all cost. In fact, in some cases, a readmission may provide a necessary time-out

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for both patient and staff to revisit the treatment plan and refine the therapeutic relationship.

Though a number of recent international publications have raised serious doubts about the future of ACT teams, the approach has provided a large body of research evidence and has been vital in the development of new services [1]. While the evidence clearly indicates that benefits may be limited and cost unjustifiable in settings where standard care services are well-resourced and able to provide comprehensive care, the contrary may be true in under-resourced areas. In fact, our results indicate that even modified versions of the original approach, with significantly larger caseloads and less frequent visits, can successfully reduce inpatient usage in high frequency patients. Once again, this may reflect more on the nature of standard care than the efficacy of the intervention. Certainly there is the hope that even in under-resourced settings an approach such as this will influence the way standard care is delivered and that over time some of the salient features of the intervention will be incorporated into standard care practice, as has been the case in other settings.

Conclusion

Assertive interventions can successfully be modified in under-resourced settings and sustain reductions in inpatient usage over time, while still remaining affordable and feasible within the context of a developing country. Such interventions need not be exclusive and limited to a small number of patients but can be successfully incorporated into existing services and tailored according to the needs of the community and resources available.

Limitations

Single-site studies on the effectiveness of ACT tend to have small sample sizes (range 41 to 64) [6,7,11]. The reason for this may vary from country to country, but in a developing country such as RSA, limited human and financial resources are the main drivers behind this. Our sample size was limited by the small ACT team size and the limitation on caseloads ($n = 80$ per team member). Despite the small sample size, we were still able to demonstrate a clear advantage for ACT in terms of time to first admission and total number of re-admissions over the observation period. These findings are based on a per-protocol statistical analysis and thus only include patients who completed the treatment originally allocated. One could argue that the sample size would have been increased by including a more diverse diagnostic group. The disadvantage of such an approach is that the likelihood of unbalanced groups (in terms of diagnostic categories) will increase significantly and thus require significantly larger samples and resources. It is thus

important to interpret the findings in light of limited diagnostic generalizability.

Abbreviations

ACT: Assertive community treatment; DIH: Days in hospital; CMHT: Community mental health teams; PSR: Psycho-social rehabilitation; DSM-IV-TR: Diagnostic and statistical manual of mental disorders, Text revision; HFUs: High frequency users; DACTS: Dartmouth Assertive Community Treatment Scale; K-M: Kaplan Meier.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

All authors conceived of and designed the study. UB acquired the data. UG, EJ and DN performed the statistical analysis. UB prepared the first draft of the manuscript and both LK and DN made significant contributions to the final draft. All authors read and approved the final manuscript.

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References

- Burns T: The rise and fall of assertive community treatment? *Int Rev Psychiatry* 2010, 22(2):130–137.
- Dixon L: Assertive community treatment: twenty-five years of gold. *Psychiatr Serv* 2000, 51:759–765.
- Smith L, Newton R: Systematic review of case management. *Aust N Z J Psychiatry* 2007, 41:2–9.
- Marshall M, Lockwood A: Assertive community treatment for people with severe mental disorders. *Cochrane Database Syst Rev* 2000, (2):CD001089.
- Petersen L, Jeppesen P, Thorup A, Abel MB, Øhlenschlaeger J, Christensen TØ, Krarup G, Jørgensen P, Nordentoft M: A randomised multicentre trial of integrated versus standard treatment for patients with a first episode of psychotic illness. *BMJ* 2005, 331(7517):602.
- Karow A, Reimer J, König HH, Heider D, Bock T, Huber C, Schöttle D, Meister K, Rietschel L, Ohm G, Schulz H, Naber D, Schimmelmann BG, Lambert M: Cost-effectiveness of 12-month therapeutic assertive community treatment as part of integrated care versus standard care in patients with schizophrenia treated with quetiapine immediate release (ACCESS trial). *J Clin Psychiatry* 2012, 73(3):e402–e408.
- Nishio M, Ito J, Oshima I, Suzuki Y, Horiuchi K, Sono T, Fukaya H, Hisanaga F, Tsukada K: Preliminary outcome study on assertive community treatment in Japan. *Psychiatry Clin Neurosci* 2012, 66(5):383–389.
- Killaspy H, Kingett S, Bebbington P, Blizard R, Johnson S, Nolan F, Pilling S, King M: Randomised evaluation of assertive community treatment: 3-year outcomes. *Br J Psychiatry* 2009, 195:81–82.
- Fiander M, Burns T, McHugo GJ, Drake RE: Assertive Community Treatment across the Atlantic: comparison of model fidelity in the UK and USA. *Br J Psychiatry* 2003, 182:248–254.
- Bodén R, Sundström J, Lindström E, Wieselgren I, Lindström L:

Five-year outcome of first-episode psychosis before and after the implementation of a modified assertive community treatment programme. *Soc Psychiat Epidemiol* 2010, 45:665–674.

- Sytema S, Wunderink L, Bloemers W, Roorda L, Wiersma D: Assertive community treatment in the Netherlands: a randomized controlled trial. *Acta Psychiatr Scand* 2007, 116:105–112.
- Burns T: End of the road for treatment-as-usual studies? *Br J Psychiatry* 2009, 195:5–6.
- McHugo GJ, Drake RE, Teague GB, Xie H: Fidelity to assertive community treatment and client outcomes in the New Hampshire dual disorders study. *Psychiatr Serv* 1999, 50:818–824.
- Hanlon C, Wondimagegn D, Alem A: Lessons learned in developing community mental health care in Africa. *World Psychiatry* 2010, 9:185–189.
- Patel V, Araya R, Chatterjee S, Chisholm D, Cohen A, De Silva M, Hosman C, McGuire H, Rojas G, van Ommeren M: Treatment and prevention of mental disorders in low-income and middle-income countries. *Lancet* 2007, 370:991–1005.
- Odenwald M, Lingenfelder B, Peschel W, Haibe FA, Warsame AM, Omer A, Stöckel J, Maedl A, Elbert T: A pilot study on community-based outpatient treatment for patients with chronic psychotic disorders in Somalia: Change in symptoms, functioning and co-morbid khat use. *Int J Ment Health Syst* 2012, 6(1):8.
- Botha UA, Koen L, Joska JA, Hering LM, Oosthuizen PP: Assessing the efficacy of a modified assertive community-based treatment programme in a developing country. *BMC Psychiatry* 2010, 10:73.
- Tyrer P: The future of specialist community teams in the care of those with severe mental illness. *Epidemiol Psychiatr Soc* 2007, 16:225–230.
- Weiden P, Glazer W: Assessment and treatment selection for “revolving door” inpatients with schizophrenia. *Psychiatr Q* 1997, 68:377–392.
- Teague GB, Bond GR, Drake RE: Program fidelity in assertive community treatment: development and use of a measure. *Am J Orthopsychiatry* 1998, 68:216–232.
- R Core Team: R: A language and environment for statistical computing. R Foundation for statistical Computing. Vienna, Austria; 2012. URL <http://www.R-project.org/>. ISBN 3-900051-07-0.

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Chapter 5

Submitted article

(Submitted to Community Mental Health Journal)

Botha UA, Koen L, Mazinu M, Jordaan E, Niehaus DJH: A randomized control trial assessing the influence of a telephone-based intervention on readmissions for patients with severe mental illness in a developing country

A randomized control trial assessing the influence of a telephone-based intervention on readmissions for patients with severe mental illness in a developing country.

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Abstract

Whilst comprehensive post-discharge interventions have been successful in reducing readmissions in our setting, they are possibly not sustainable due to limited resources. We assessed the impact of a more cost-effective telephone-based intervention on readmissions in a developing country over 12 months. 100 patients with severe mental illness were randomized to facilitated care or treatment as usual. All were interviewed prior to discharge and after 12 months. Facilitated care consisted of structured telephonic interviews and motivational support to patients and families. At 12-months no significant differences in either readmissions ($p=0.10$) or days in hospital ($p=0.44$) could be demonstrated. Substance use was high (64%), particularly methamphetamine (44%) in both groups. The intervention did not have any impact on inpatient usage in our setting. Affordable post-discharge services should be more comprehensive to reduce readmission rates and would have to be tailored to the distinct population of dual diagnosis patients identified in this study.

Trial Registration: SANCTR3548

Keywords:

Post-discharge initiative, telephone-based facilitation, readmission, days in hospital, dual diagnosis patients

Introduction

The last two decades have seen a significant increase in community-based interventions for patients with severe mental illness (Dixon 2000, Smith and Newton 2007, Marshall and Lockwood 2000, Karow et al. 2012, Boden et al 2010, Vigod et al. 2013, Marshall et al. 2011). One of the driving forces behind this research impetus has undoubtedly been the worldwide pressure on inpatient beds, caused by the reduction of acute psychiatric beds as part of the global drive towards deinstitutionalization. In South Africa, these repercussions are experienced the same way as in many

other countries in the world, but are additionally influenced by factors unique to this particular setting (Lazarus 2005)..

The post-discharge period is associated with high drop-out figures, with recent studies showing less than 50% of patients attend their first scheduled outpatient appointment and significant delays between discharge and outpatient follow-up (Boyer et al. 2000, Klinkenberg and Calsyn 1996). The first month after discharge is often most critical as readmissions peak during this period (Naji et al. 1999). These findings highlight the importance of post-discharge interventions that ensure smooth transition to outpatient care. Interventions employed during this period are very diverse, ranging from mere pre-discharge, once-off interventions to well-defined programs utilizing care-coordinators who facilitate care over extended periods of time (Vigod et al. 2013, Steffen et al. 2009, Nurjannah et al 2014, Dixon et al. 2009). In a recent review of 11 studies, Steffen et al concluded that discharge interventions were effective in reducing readmissions and improving adherence (Steffen 2009).

Readmissions rates are influenced by a wide range of factors and may vary significantly depending on how psychiatric services are structured as well as the specific socio-demographic factors influencing in-patient usage in a particular setting (Loch 2012, Zhou et al. 2014, Barekataan et al. 2014). Though readmission rates are a popular outcome measure, they do not accurately reflect overall inpatient usage, since readmissions alone do not reflect length of stay (Puschner et al. 2011). To better reflect the nature of inpatient use many authors combine readmissions with cumulative days in hospital (DIH) over a given period of time (Lucas et al. 2001)

The Transitional Discharge Model focuses specifically on reducing readmissions in the first 90 days after discharge by providing a range of inputs during the pre-discharge and post-discharge period. In a recent systematic review, Vigod et al commented that high rates of early readmissions may be an indication of the quality of in-patient care or inadequate continuity of care on discharge. The review assessed the effect of transitional care and identified specific components that were associated with a

lower readmission rate. These components include psychoeducation (pre-and post-discharge), home-visits, phone-call reminders, making use of a transitional manager and communication with primary care providers. The authors concluded that a number of the transitional care components could easily be incorporated into a cost-effective intervention and urged the need for further exploration of these models (Vigod et al. 2013). The potential for cost-effective modification of the model makes it attractive to developing countries, where resources are often limited.

The recent National Mental Health Summit held in South Africa in April 2012 served as an excellent stage to reflect on the status of mental health service delivery in South Africa. The summit concluded with a policy commitment which amongst other issues, called for more comprehensive continuity of care between in-patient services and primary care providers in an attempt to reduce “revolving door” patients. In addition to this, there was also a call for an increase in research assessing mental health services in local settings in an attempt to instruct development of service with evidence-based arguments (Lund et al. 2012).

Also in South Africa, our group reported on a modified ACT program which produced significant reduction in readmission rates in a group of high-frequency users compared to a control group [Botha et al. 2010]. A three year follow-up of this group reported sustained reduction in days in hospital and lower readmission rates (Botha et al. Apr 2014). Although the intervention was modified to allow for larger case loads and less frequent visits, it remains a comparatively costly, specialized service which is only available to a relatively small part of the population. This type of service, despite its success in reducing admissions, may not be justifiable in a developing world where resources are limited and standard care practice has so much room for improvement. Consequently, we piloted a post-discharge service which would offer less comprehensive input, could be accessible to more patients and remain affordable. The service would attempt to enhance use of existing standard care services by incorporating some care components that have been identified in the literature to be effective in reducing readmissions.

Aim

Primary Objective: The purpose of the study was to assess the effect of a post-discharge, telephone-based intervention on readmissions and DIH in patients with severe mental illness over a one year period.

Secondary Objective: In addition to the main objective, we were also explored the effect of the intervention on illness severity.

Ethical Considerations

This study was submitted to the Committee for Human Research of the University of Stellenbosch (N09/10/263) and was conducted in accordance with the International Committee for Harmonisation (ICH) Good Clinical Practice (GCP) guidelines and SA GCP as well as the Declaration of Helsinki (2000). All participation was on a completely voluntary basis and patients were able to withdraw their permission at any time. The study was registered on the National Clinical Trial Register. (SANCTR nr 3548).

Methods

This was a randomized, non-blinded clinical trial conducted at Stikland Hospital in Cape Town, South Africa. Participants were randomized using standard tables to one of two groups (a) Facilitated Care Group (FCG) and (b) Treatment as Usual Group (TUG). The allocation sequence was monitored by the principal investigator (UB). The study continued until the last included participant reached the end of the 12 month follow-up period.

Inclusion criteria: Participants (male and female) were between the ages of 18 and 59 (inclusive), had an established diagnosis of schizophrenia, schizo-affective disorder or bipolar disorder and were able to give written, informed consent.

Exclusion criteria; Patients with moderate to severe mental retardation, unstable co-morbid medical illness, receiving other assertive interventions, those unable to provide reliable phone number on discharge and patients living more than 30 km outside the Metro Catchment Area of Stikland Hospital, were excluded. Exclusion criteria were intended to avoid biasing outcomes of the intervention.

Study procedure

After consent was obtained, participants (FCG + TUG) were interviewed by a member of the study team in the week prior to discharge with a semi-structured interview to collect data on demographics, medical and psychiatric history and treatment history. Substance use questionnaires and CGI's were completed.

Intervention Procedure

The intervention consisted of telephonic facilitation of the existing standard care service. Participants allocated to the FCG were each assigned a care facilitator (CF). CF's were members of the local ACT team and experienced in community-based follow-up of patients with chronic mental disorders. All team members were briefly trained in providing a concise, semi-structured telephonic intervention. Patients were seen by CF's prior to discharge and then contacted telephonically every two weeks. A single emergency home visit was allowed to re-engage patients who had lost contact. CF's also liaised with mental health care providers to confirm attendance and provide feedback.

Participants in the FCG received the intervention for 12 months. On conclusion of the study, participants in the FCG who were thought to require more comprehensive follow-up, were referred to the local ACT team. The remainder of FCG patients were referred back to standard care services.

Standard Care

Participants allocated to TUG received the standard community mental health care as provided in their local community. This includes a wide range community-based follow-up at local mental health clinic level, provided by community mental health nurses. There is no set standard for frequency of contacts and care is generally tailored according to the service pressure and resources available. During the exit (12 month) interview, data was collected on readmissions and treatment history of the last 12 months, and CGI's were completed. Participants in the FCG also completed a brief questionnaire on how the intervention was experienced.

Statistical Analysis

The purpose of the study was to assess the effect of the telephone-based intervention on readmissions. All data was entered into a single database. Data was analysed and processed in consultation with a statistician. The demographic data was summarised as counts (n), frequencies and percentages (%) for categorical variables, as well as means, medians and interquartile ranges (IQR) for numerical variables. For the categorical independent variables, the Fisher's exact test was used to assess differences in demographic and substance use patterns between the two groups (FCG and TUG). This comparison was done to check that the randomization resulted in balanced groups. The DIH and number of admissions were the primary outcomes. Histograms of the distributions for the pre- and post- outcomes were included to show the non-normality of these variables (Figures 3-6). The clinical global impression (CGI) was the secondary outcome. Since this is a randomized-controlled trial, the primary analysis is a comparison of the outcomes for the FCG and TUG groups at post-intervention. However, the pre-intervention outcomes are first checked for differences in group outcomes. If differences are found, these would be adjusted for in the post-intervention comparison. The DIH, number of admissions and clinical global impression (CGI) outcomes pre- and post- were skew and not normal. For comparison of FCG and TUG groups, the number of admissions and clinical global impression (CGI) outcomes pre- and post- were changed to an ordinal scale (3 categories) to

accommodate the non-normality in the distributions. To statistically test whether there is a difference between the intervention and control groups, the Cochran Armitage test for trend was performed. To statistically test for significance between the FCG and TUG groups for DIH, the numerical scale was retained and the Kruskal-Wallis test was used.

Finally, the differences for the two main outcomes, DIH and number of admissions pre- minus post-intervention were obtained. The mean and standard deviation for the differences were obtained and the change from pre- to post- were analysed using a t-test (the distribution of the differences was normal).

Results

367 patients were assessed for eligibility to participate in the study, 267 did not meet the inclusion criteria.. Of the hundred (n=100) patients who signed informed consent, 49 (n=49) were allocated to the FCG and 51 (n=51) to the TUG. At 12 month follow-up, twelve (n=12) patients in the TUG group could not be located for follow-up. Six (n=6) patients in the FCG group did not complete the study. Data was analysed for 43 (n=43) patients in the FCG and 39 (n=39) patients in the TUG. Though only two (n=2) of the FCG patients could not be located, an additional 4 were not included in the final analysis for various reasons

There were no significant differences in the demographics of the two groups. As expected in this particular catchment area of the Western Cape Metro, the majority (79%) had mixed ethnicity, 77% of participants were single, 88% unemployed and 61% male. Most patients (92%) lived with their families and received disability grants (61%). The incidence of illicit substance use was high in both groups, with 63% of participants (FCG+TGU) admitting to use of illicit substances, 40% indicating that cannabis was their current drug of choice and 14% indicating that methamphetamine was their current drug of choice. The choice of drugs between the FCG and TUG were significantly different ($p<0.001$) and 20% of patients in the FCG indicated that methamphetamine was their current drug of

choice, compared to 8% in the TUG. There were no other significant differences between the two groups in terms of substance use patterns, but it is important to note that 44% of participants in both groups admitted to frequent use of methamphetamine (weekly+daily). Up to 59% of patients reported frequent use of cannabis.

12 month pre-inclusion:

There were no significant differences in admissions between the two groups at the initial visit ($p=0.48$). and there were no significant differences between the groups in terms of the Clinical Global Impression (CGI) ($p=0.64$). There was a marginally significant difference in the DIH for the FCG (mean=106) compared to the TUG (mean=95) at the initial visit.

12 month Post-inclusion:

There were no differences in readmissions ($p=0.44$) and DIH ($p=0.25$) at 12 month follow-up. More than a third (34%) of patients in both groups had readmissions over the 12 month period, 12% of patients had more than one admission during this period. Patients in the FCG appeared to be more likely to have more than one readmission (18%) compared to the TUG patients (7%).

According to the CGI, it seemed that more of the TUG patients were severely ill at 12 month follow-up (23% compared to 11% of the FCG patients) and fewer were not ill (21% compared to 35% of the FCG patients; $p<0.05$). In terms of how the intervention was experienced, it is interesting to note that the majority of participants did not find the intervention intrusive (72%), 81% felt that the intervention was helpful most or all of the time, yet more than a third of participants did not feel that the intervention helped them to understand their illness better. Staff members reported that only 53,49% of participants engaged well with the intervention and 67,44% of participants were difficult to reach some or all of the time.

We also looked at the difference between the days in hospital (pre-inclusion) and days in hospital (post-inclusion). From this, it is clear that there was a significant drop in the number of days in hospital from pre to post intervention (mean difference = 73, SD = 68, t-test = 10, $p < 0.0001$). However, the drop in length of stay was similar for both groups (FCG: mean = 78, SD = 69; TUG: mean = 68, SD = 65, t-test = 0.75, $p = 0.455$).

Discussion

Our results indicate that telephone-based facilitation of standard care does not appear to be effective in reducing readmissions and DIH in our setting. This is an interesting finding, considering that similar interventions have been proven to be effective in other settings (Vigod et al. 2013, Nurjannah et al. 2014). Also, previous studies in this setting have successfully demonstrated reduction in DIH in high frequency users (HFUs) when more comprehensive, assertive approaches are used (Botha et al. Feb 2014).

This study was performed in an inpatient system which is under tremendous pressure and where a crisis discharge policy is in place to mediate bed availability. This means that patients who are not well yet, are discharged to make room for patients who are more ill and pose a higher risk to themselves and members of the community. In one local study, patients who had been crisis discharges were found to be more likely to be readmitted (Niehaus et al. 2006). Due to the high turnover in inpatient wards, patients rarely remain in the ward long enough to receive meaningful psychosocial interventions and such interventions are often difficult to access once discharged. Patients who have not been optimally treated upon discharge, may be more likely to become non-compliant soon after discharge, are less likely to engage with outpatient services and more likely to start using substances again (Vigod et al. 2013, Lazarus 2005, Steffen et al. 2009, Nurjannah et al. 2014). It is likely that patients in the FCG were still too ill to benefit from the marginal support this

intervention offered. Our findings with regards to participants' understanding of their illness is interesting, since this mirrors previous findings with regards to the influence of lower levels of understanding on the effect of discharge planning (Sledge et al. 2008).

Although there were no significant differences reported in DIH between the two groups, these findings reflect the importance of including this measure, since there were wide ranges in reported lengths of stay. Our findings showed that patients in the FCG were more likely to have multiple readmissions. The higher incidence of multiple readmissions in the FCG may be a manifestation of the facilitation of care provided by CF's, who would be able to streamline admissions and intervene early on during relapse. Interestingly, CF's frequently reported feeling more overwhelmed in supporting FCG patients, compared to the ACT patients that constituted their regular caseload. They accounted this to the fact that home visits allowed for a valuable patient/carer contact during which many crises could be averted. The CF's often reported that telephone-based contact appeared to be ineffectual in containing carers and engaging with patients. The only recourse in case of crisis was to facilitate an urgent appointment with the CMHN, which often resulted in a readmission due to a lack of other containment options.

The prevalence of substance use in both FCG and TUG group was significant. The past ten years have seen a sharp rise in methamphetamine abuse in the Western Cape to the extent of being considered a health crisis in the Province (Bateman 2006). A local study published in 2013, reported on the demographic profile of methamphetamine users in psychiatric inpatient units in the Western Cape Province. In 2002, only 0,2% of inpatients reported methamphetamine as their preferred substance. This number increased to 19,3% in 2004 and the 2013 study found that 59% of patients in psychiatric inpatient units reported methamphetamine as their primary used substance (Plüddemann et al. 2008). The prevalence of cannabis use remains quite high. Unpublished data from a study performed in the same unit in 2007, revealed that 73,2% of patients with chronic mental illness reported cannabis as their drug of choice, whereas only 11,3% reported methamphetamine as their drug of choice (Botha et

al. 2010). Though the prevalence of substance use was not the focus of this study, our findings highlight the sharp rise in especially methamphetamine use in the province. It is likely that this may further influence the success of discharge interventions that are not specifically tailored for patients with dual diagnoses.

Our study demonstrates that telephone-based facilitation of standard care may not be an effective post-discharge intervention in our particular setting. Patients who are not fully stabilized on discharge require more comprehensive support in order to avoid readmission. This study also demonstrates the impact unique substance use trends (particularly methamphetamine in this setting) may have on inpatient services and consequently, post-discharge services. At face value, it may seem that we are reporting on an unsuccessful intervention. However, this is an important finding, since telephone-based facilitation may be more affordable, but does not have an impact on inpatient usage. We are therefore still in search of an effective and affordable intervention that is practical in an under-resourced setting and accessible to a wide range of patients.

Conclusion

Telephone-based facilitation of existing standard care services in this setting did not have any impact on readmission rates or DIH for mental health care users. There is still a need for further exploration of affordable and practical post-discharge services that impact on inpatient service use. Our study also identifies the need for services that incorporate a unique approach to support the distinct population of substance using mental health service users.

Limitations

The authors acknowledge some limitations to the study. Firstly, the small sample size implies that any conclusions drawn from the study should be interpreted with caution. Specifically, some of the exclusion criteria (such as not having access to a telephone) may have biased the sample characteristics and access to services. Also, data collection in a pre-discharge population could

be biased as service users may be reluctant to acknowledge some aspects of history that they feel could impact on the discharge decision.

Authors' contributions

All authors conceived of and designed the study. UB acquired the data. MM, EJ and DN performed the statistical analysis. UB prepared the first draft of the manuscript and both LK and DN made significant contributions to the final draft. All authors read and approved the final manuscript.

References

1. Backer, T.E., Howard, E.A., & Moran, G.E. (2007) The role of effective discharge planning in preventing homelessness. *Journal of Primary Prevention*, 28,229–243..
2. Barekatin, M., Maracy, M.R., Rajabi, F., & Baratian H. (2014) Aftercare services for patients with severe mental disorder: A randomized controlled trial. *Journal of Research in Medical Sciences*, Mar;19(3):240-5.
3. Bateman, C. (2006) “Tik” causing a health crisis. *South African Medical Journal*, Aug 96(8):672, 674
4. Bodén, R., Sundström, J., Lindström, E., Wieselgren, I., & Lindström, L. (2010) Five-year outcome of first-episode psychosis before and after the implementation of a modified assertive community treatment programme. *Social Psychiatry and Psychiatric Epidemiology*; 45:665–674
5. Botha, U.A., Koen, L., Joska, J.A., Hering, L.M., & Oosthuizen P.P. (2010) Assessing the efficacy of a modified assertive community-based treatment programme in a developing country. *BMC Psychiatry*;Sep; 10:73
6. Botha, U.A., Koen, L., Joska, J.A., Parker, J.S., Horn, N., Hering, L.M., & Oosthuizen, P.P. (2010) The revolving door in Psychiatry: comparing low-frequency users and high-frequency users of psychiatric inpatient services in a developing country. *Social Psychiatry and Psychiatric Epidemiology*, Apr;45(4)461-8
7. Botha, U.A., Koen, L., Galal, U., Jordaan, E., & Niehaus, D.J.H. (2014) The rise of assertive community interventions in South Africa: a randomized control trial assessing the impact of a modified assertive intervention on readmission rates; a three year follow-up. *BMC Psychiatry*, Feb 27;14:56. doi: 10.1186/1471-244X-14-56
8. Boyer CA, McAlpine DD, Pottick KJ, & Olfson M. (2000) Identifying risk factors and key strategies in linkage to outpatient psychiatric care. *American Journal of Psychiatry*, 157:1592-1598
9. Dixon, L. (2000) Assertive community treatment: twenty-five years of gold. *Psychiatric*

Services; 51:759– 765

10. Dixon L., Goldberg, R., Iannone, V., Lucksted, A., Brown, C., Kreyenbuhl, J., Fang, L., & Potts, W. (2009) Use of a critical time intervention to promote continuity of care after psychiatric inpatient hospitalization. *Psychiatric Services*, 60(4) 451-458
11. Karow, A., Reimer, J., König, H.H., Heider, D., Bock, T., Huber, C., Schöttle, D., Meister, K., Rietschel, L., Ohm, G., Schulz, H., Naber, D., Schimmelmann, B.G., & Lambert, M. (2012) Cost-effectiveness of 12-month therapeutic assertive community treatment as part of integrated care versus standard care in patients with schizophrenia treated with quetiapine immediate release (ACCESS trial). *Journal of Clinical Psychiatry*, Mar;73(3):e402-8
12. Klinkenberg, W.D., & Calsyn, R.J. (1996) Predictors of receipt of aftercare and recidivism among persons with severe mental illness: A review. *Psychiatric Services*, 47:487-496
13. Lazarus, R. (2005) Managing de-institutionalization in a context of change: the case of Gauteng, South Africa. *South African Psychiatry Review*, 8:65–69
14. Loch, A.A. (2012) Stigma and higher rates of psychiatric re-hospitalization: São Paulo public mental health system. *Revista Brasileira de Psiquiatria*, Jun:34(2):185-92.
15. Lucas, B., Harrison-Read, P., Tyrer, P., Ray, J., Shipley, K., Hickman, M., Patel, A., Knapp, M., & Lowin A. (2001) Costs and characteristics of heavy inpatient service users in outer London. *International Journal of Social Psychiatry*, 47:63-74.
16. Lund, C., Petersen, I., Kleintjes, S., & Bhana, A. Mental Health Services in South Africa; Taking Stock. *African Journal of Psychiatry*, 15:402-405
17. Marshall, M., & Lockwood, A. (2000) Assertive community treatment for people with severe mental disorders. (2000) *Cochrane Database*;CD001089
18. Marshall, M., Crowther, R., Sledge, W.H., Rathbone, J., & Soares-Weiser, K (2011). Day hospital versus admission for acute psychiatric disorders. *Cochrane Database*. Dec 7;(12) CD004026

19. Naji, S.A., Howie, F.L., Cameron, I.M., Walker, S.A., Andrew, J., & Eagles, J.M. (1999) Discharging psychiatric in-patients back to primary care: a pragmatic randomized controlled trial of a novel discharge protocol. *Primary Care Psychiatry*, 5,109–115
20. Niehaus, D.J.H., Koen, L., Galal, U., Dhansay, K., Oosthuizen, P.P., Emsley, R.A., & Jordaan, E. (2008) Crisis discharges and readmission risk in acute psychiatric male inpatients. *BMC Psychiatry*, 8:44
21. Nurjannah, I., Mills, J., Usher, K., & Park, T. (2014) Discharge planning in mental health care: an integrative review of the literature. *Journal of Clinical Nursing*, 23:1175-1185
22. Plüddemann, A., Myers, B.J., & Parry, C.D. (2008) Surge in treatment admissions related to methamphetamine use in Cape Town, South Africa: implications for public health. *Drug and Alcohol Review*, Mar;27(2):185-9
23. Puschner, B., Steffen, S., Volker, K.A., Spitzer, C., Gaebel, W., Janssen, B., Klein, H.E., Spiessl, H., Steinert, T., Grempler, J., Muche, R., & Becker, T. (2011) Needs oriented discharge planning for high utilisers of psychiatric services: multicentre randomised controlled trial. *Epidemiology and psychiatric sciences*, 20, 181–192
24. Smith, L., & Newton, R. (2007) Systematic review of case management. *Australian & New Zealand Journal of Psychiatry*; 41:2-9
25. Steffen, S., Koster, M., Becker, T. & Puschner, B. (2009). Discharge planning in mental health care: a systematic review of the recent literature. *Acta Psychiatrica Scandinavica*, 120, 1–9
26. Vigod, S.N., Kurdyak, P.A., Dennis, C., Leszcz, T., Taylor, V.H., Blumberger, & D.M., Seitz, D.P. (2013) Transitional interventions to reduce early psychiatric readmissions in adults: systematic review. *British Journal of Psychiatry*;202, 187–194
27. Zhou, Y., Rosencheck, R.A., Mohamed, S., Fan, N., Ning, Y., & He, H. (2014) Retrospective assessment of factors associated with readmission in a large psychiatric hospital in Guangzhou, China. *Shanghai Archives of Psychiatry*, Vol. 26, No. 3

Chapter 6

Discussion

In the first study of this project, the authors identified the characteristics of high frequency users in our local setting and established that they are similar to HFUs described in the international literature. This was an important finding, since specific socio-demographic and service-related factors in the study setting may influence high frequency patterns. Also, this justifies the use of an international service model, which is what the authors evaluated in the second and third study. In these studies, we demonstrated that modified, assertive interventions are effective in reducing readmissions and DIH in HFUs over a 12-month period and that these reductions in inpatient usage can be sustained for 36 months. However, this type of assertive, comprehensive service is comparatively expensive and only available to a select portion of mental health users. This prompted the authors to pilot a more accessible, but less comprehensive service in an attempt to find a more affordable and widely available service. This intervention was not successful in reducing readmissions and DIH in a group of patients with serious mental illness.

Study 1:

This study compared a group of LFUs with a group of patients meeting a pre-defined, HFU criteria. The characteristics associated with HFU in our patients, were in keeping with global trends. The majority of HFUs were single (92.6%) and male (76.8%). HFUs had higher PANSS scores on all subscales and total scores, indicating that HFUs were more severely ill on admission compared to patients in the LFU group. In addition to this, we demonstrated that high frequency users were more likely to have a diagnosis of schizo-affective disorder, more likely to require a moodstabilizer and more likely to meet the criteria for treatment resistance. These findings are similar to those of Rabinowitz, who reported HFUs were associated with higher degrees of dangerousness and psychopathology. In addition to these findings, a number of articles reflect an association between complexity and severity of mental disorders and high frequency service use.^{1,2,3,4} Our finding that crisis discharges are associated with high frequency use is extremely relevant, since this strengthens the argument made by Niehaus et al against the use of this demoralizing and counter-productive policy.⁵ This policy also significantly impacts on the quality of discharge planning patients receive prior to discharge, which Caton et al identified as a risk factor for early readmission.² Substance use patterns were very similar between the two groups, with one important exception; only HFUs admitted to use of

methamphetamine (11%). In 2007, methamphetamine use in the province was on the rise and these findings reflect that high frequency service use is more likely to be associated with methamphetamine use.

Potentially the most important finding of this study was that LFUs were more likely to be on depot medication. This could potentially be a manifestation of illness severity, since many of the HFUs (23%) met the criteria for treatment resistance, which would make them unlikely candidates for monotherapy with a depot anti-psychotic. However, this finding highlights the role of assured medication delivery in preventing relapse and suggests that injectable anti-psychotics may protect patients from becoming HFUs. Over the last number of years, a number of oral atypical anti-psychotics have been introduced to the field of psychiatry, which influenced prescribing trends significantly.

Until fairly recently, the majority of injectable anti-psychotics, were typical anti-psychotics, which are historically associated with a higher degree of extra-pyramidal side-effects and thus, less tolerable. The CATIE study, amongst others, clearly demonstrated the advantages many of the atypical agents have in terms of superior tolerability, compared to typical anti-psychotics.⁶ More recently, a number of atypical injectable anti-psychotics have been introduced to the market, which add significantly to the prescribing options available to the modern psychiatrist. Unfortunately, many psychiatrists and patients are still of the opinion that injectable anti-

psychotics should be reserved for patients who have difficulty with compliance and that oral treatment is somehow more “humane”. This archaic opinion is not in keeping with the evidence provided in the literature, which clearly demonstrates that depot injectables are superior in preventing relapse and offer the only guarantee of full compliance.^{7,8,9,10}

In 2014, Chiliza et al reported on a longitudinal study combining a typical injectable anti-psychotic with an assertive monitoring program. The authors concluded that medication appeared to be tolerated well and that the intervention was effective and particularly suitable in under-resourced settings.¹¹

The results from this study were instrumental in understanding the needs of HFUs, especially in the planning of the assertive intervention, which was piloted in the next phase of the project (Study 2).

Study 2:

In this study we assess the effect of a modified intervention on inpatient usage, quality of life (QOL) and illness severity compared to a control group over a 12-month period. The intervention was a modified ACT service, with larger caseloads, less frequent contacts and less access to psychosocial services, compared to models described in the interventional literature. At 12-month follow-up, patients in the intervention group were significantly less ill,

as demonstrated by significantly lower scores on both positive ($p < 0.01$) and general ($p < 0.01$) PANSS subscales. Patients in the intervention group had higher levels of functioning, as reported by significantly higher SOFAS scores. Most notably, the ACT intervention resulted in only 34,5% of patients being readmitted, compared to 71,4% in the control group. The overall inpatient usage, reflected by DIH, was also significantly less in the intervention group.

Although these findings are heartening, the literature clearly reflects that 12-month follow-up periods may be too short to accurately assess post-discharge interventions. Caton et al reported that the effect of discharge interventions were likely to tail off over time.² In addition to this, the “new team” effect has been described in studies reporting on newly established interventions where enthusiasm and the motivation to produce early results, may drive early outcomes. This necessitates re-assessment of initial outcomes at a later period, as Killaspy et al demonstrated in their 2009 article reporting on a randomized assertive community treatment service.^{12,13} This was also the motivation for the next study (Study 3) in our series.

Study 3:

In this study we report on the effect of the previously described, modified assertive intervention after 36 months. We compared the inpatient service

use (reflected by readmissions and DIH) of the intervention group, with the same control group from our previous study. In this study, we are able to demonstrate that the positive outcomes we reported on in our 12-month follow-up study, can be sustained over a 36 month period. The intervention group still had significantly less readmissions ($p=0.007$) and DIH ($p=0.013$) compared to the control group.

The sustained positive outcomes support the implementation of modified assertive interventions in the long run. However, one major criticism against this type of intervention in an under-resourced setting such as South Africa, is that it remains a comparatively expensive intervention. In addition to this, the target group in these two studies was a group of HFUs, as the main motivation behind the service was to reduce readmissions and subsequently, reduce cost associated with inpatient care. However, some may argue that this is not necessarily the most appropriate target population for a specialized service in an under-resourced setting. Justifiably, one may argue that first-onset psychosis (FOP) patients may represent a more appropriate population. Early comprehensive care focused on relapse prevention may change the course and outcome of their illness for young FOP patients. A number of studies have reported on assertive models piloted in FOP populations both locally and abroad. Outcome measures for such studies are slightly different, since demonstrating reduction in inpatient usage would not

be possible. Chiliza et al reported on such an Assertive Monitoring Programme (AMP) as part of an FOP study in patients treated with long-acting injectable and concluded that this was viable option in under-resourced settings.¹¹ Petersen et al reported on 547 FOP patients in a 2005 study comparing integrated care (consisting of assertive community treatment and family interventions) with standard care. The study demonstrated significantly less comorbid substance use, better adherence and better patient satisfaction in the integrated care group.¹⁴

Another possible application of the ACT model in an under-resourced setting, would be to apply the model as a time-limited post-discharge intervention for a heterogeneous group of patients, over a pre-defined post-discharge period. Both Dixon and Rosenheck have reported favourable results associated with time-limited approaches, provided transfer of care on conclusion of the intervention, is done in an effective manner.^{15,16} An obvious caveat in modification of any model, is to be aware of over-dilution of the salient features which contribute to positive outcomes, while still making it accessible to more patients and financially attractive for managers. With these factors in mind, the authors conceptualized the fourth and last study in this project.

Study 4:

This was a non-blinded randomized control trial assessing the effect of a telephone-based post-discharge intervention on inpatient usage over a 12-month period. The intervention was made available to all patients (not only HFUs) with a prior diagnosis of schizophrenia, schizo-affective disorder or Bipolar Disorder and did not require high frequency criteria to be met. At 12-month follow-up, there was no difference in inpatient usage between the intervention and the control group. There were no changes in quality of life, but the intervention group appeared to be less ill (as measured by CGI-S). Interestingly, substance use questionnaires completed on inclusion (prior to discharge from hospital) revealed that 59% of patients indicated using cannabis frequently (more often than weekly/daily) and 44% indicated using methamphetamine frequently. This is a rather ominous baseline finding, considering the evidence for the association between substance use and early readmission.^{17,18} Also, this highlights the increase in methamphetamine use amongst patients with primary psychiatric disorder in this province, since earlier (2007) results by this author demonstrated an 11% lifetime incidence of methamphetamine use in HFUs only.

In addition to the negative outcomes in this study, staff members reported that patients were often difficult to reach (67,4%), more than half of patients (53,4%) did not engage well with the intervention and more than a third of

patients did not feel that the intervention helped them to understand their illness any better. Staff members reported that rates of substance use within the first month after discharge were high and that non- and partial compliance were common in the early post-discharge period. Staff members reported feeling overwhelmed by the degree of social adversity families were faced with and felt that mere telephonic contact did not offer the appropriate and adequate opportunity to address and contain these concerns. Home visits were only allowed when patients had disengaged and when performed, often led to readmissions due to lack of any other form of containment.

The results and experiences reported from this study indicate that mere telephonic facilitation of existing standard care services does not reduce readmissions and provides only subjective relief for families. The lack of outcomes in this study were likely to have been exacerbated by the high rates of substance use (especially methamphetamine use), the existing crisis discharge policy, over-burdened community mental health services and the challenging social-economic factors patients are faced with. This study further highlights the need for interventions aimed at dual diagnosis patients, since these patients are currently highly represented in acute psychiatric inpatient populations.

General Comments

This research project is centrally focused on establishing modified assertive intervention in a developing world. Globally, such interventions are introduced primarily to reduce readmission rates in patients with high frequency inpatient usage. Conceptualization of new services should be done with clear perspective of patient needs, which may vary considerably between services and countries.

Local socio-economic factors, such as substance use trends, may contribute significantly to service use patterns and should be considered when modifying models from other settings. Our initial findings in Study 1 demonstrate that HFUs in our setting are similar to those described in the international literature, however even then the data on substance use indicated that HFUs were more likely to use methamphetamine. In study 4, we report significant (44%) methamphetamine use in a non-HFU group of patients with serious mental illness, which demonstrates the impact abuse of this substance is having on inpatient populations. Patients with a serious mental illness who also have a substance use disorder, are referred to as Dual Diagnosis patients. This patient sub-population constitutes a group of patients who have very distinct needs and contribute significantly to mental health costs. Patients with serious mental illness are more vulnerable to substance use for a number of reasons. First of all, patients may use

substances to “self-treat” residual symptoms of their illness or to help with side-effects experienced as result of psychiatric medication. Stimulant drugs, such as methamphetamine may subjectively appear to alleviate the negative symptoms of schizophrenia and help with depressive symptoms. Patients with chronic mental illness often have difficulty with conflict management, assertiveness and social skills, which puts them at risk of being taken advantage of and makes it difficult for them to cope in stressful situations. For many of these patients, substance use becomes a “default” coping skill which helps them to cope with stress and conflict. Our data from study 4 with regards to substance use and readmission rates, suggests that current inpatient populations have a high representation of dual diagnosis patients and most likely, HFUs.

Though the assertive intervention we reported on was successful in reducing readmissions, the target group of this intervention remains controversial. HFUs may be popular candidates for studies measuring inpatient usage as primary outcome, since it is comparatively easy to demonstrate a reduction, if admission rates were high to start with.¹⁹ A few points need to be kept in mind though, when considering inpatient usage as main outcome. For many patients, a reduction of readmissions does not necessarily indicate a better outcome. This has been a major criticism against ACT teams that are outcome-orientated, as the drive to avoid admissions at any cost, often leads

to patients being denied access to a service that they actually need to get better. For this reason, it is often mentioned that reduction of readmissions has become a “managers” goal, whereas improvements in functioning and overall clinical gains, are often the clinicians’ primary goals.²⁰ This is also reflected by Clausen et al in their 2016 study, which concluded the ACT interventions may contribute to more appropriate inpatient usage by reducing inpatient days for HFUs and increasing usage for LFUs.²¹ Ideally, the success of an intervention would not only be reflected by its ability to reduce readmissions, but also to demonstrate clinical improvements, such as reduction in symptomatology, improved social functioning and quality of life. In the second study of our research project, we are able to demonstrate significant improvements in clinical outcomes in addition to reduced readmission rates.

Though our results from study 2 and 3 are encouraging, the question remained if it was possible to reach more patients and still produce positive results. One of the most limiting factors in assertive interventions is the performance of home-visits, which are quite time-intensive. Study 4 was conceptualized under the premise that it might be possible to deliver an assertive approach telephonically, which would save time and thus allow for much larger caseloads. The “intervention” offered consisted of a pre-discharge visit, followed by structured telephonic interviews with patients and

families, appointment reminders and phone calls to local clinics confirming attendance. The intervention was based on services described in the Transitional Care Model and tried to incorporate some of the salient aspects of the ACT model, which were thought to contribute to the success of study 2 and 3.²² These included establishing a therapeutic relationship and promoting engagement with the primary service provider. The subjective staff experience on this study was that patients were still quite ill on discharge, which complicated early engagement and made it difficult to build a therapeutic relationship. Family members were often very overwhelmed and required significant reassurance and support, which was difficult to provide telephonically.

Substance use and non- or partial compliance were often identified early after discharge, but were very difficult to address effectively with telephonic contact. Staff members felt quite overwhelmed by the degree of distress they were faced with and did not find the intervention was adequate in containing their own and patients' distress. The "facilitation" of standard care, was complicated by the fact that the mental health clinics are very over-burdened and could rarely respond to staff requests as required.

Communication between staff and primary care providers was also found to be time-consuming and ineffective. In retrospect, this intervention relied heavily on an infra-structure that was possibly over-estimated and targeted a

patient population which was under-estimated. The importance of successful engagement has been identified as a key factor in assertive interventions for patients with dual diagnosis.²³ Facilitation of care may be more successful where patients are already engaged with a well-structured service. This strategy has been followed in the local ACT service with long-term ACT patients who have been stable for some time, but are not yet ready to be devolved to standard care services. Typically, these patients would be making use of standard care services, with mere facilitation by a member of the ACT team. More simply put, facilitative care appears to be most effective when used to support patients who are already stable and compliant.

The recent Mental Health Summit, held in 2012 concluded with a call for, amongst others, an increase in service-based research to inform the development of new services with evidence. In addition to this, it was highlighted that tertiary care needed to focus on interventions that could successfully bridge the gap between inpatient and outpatient care.²⁴ This was reiterated in the National Mental Health Policy Framework and Strategic plan, which emphasized the need for evidence-based approaches to inform policies and services, as well as recovery-based models of care.²⁵

This research project has highlighted the need for an effective and affordable intervention that can support patients effectively during the post-discharge period. The current milieu in acute inpatient units locally, makes timely and

effective discharge planning almost impossible. In addition to this, recently discharged patients are faced with social stressors, over-burdened community-based services and methamphetamine use patterns of epidemic proportions.

Conclusions and reflective assessment of contribution

This project demonstrates how the characteristics of local inpatient users are similar in our setting, compared to those reported in the international literature. However, we were also able to identify unique local factors that impact service use patterns, readmissions rates and subsequently, will impact on service development. Most importantly, we were able to provide evidence of the significant methamphetamine use patterns in psychiatric inpatients in this province.

We were able to demonstrate that assertive interventions, even when modified considerably, are still effective in reducing inpatient usage in patients who are frequently admitted and that these outcomes can be sustained over time. Our project collectively demonstrates the need for a transitional or post-discharge intervention that would be more widely accessible to all recently discharged patients. This intervention should not rely on mere facilitation but would have to incorporate at least some of the

salient features of assertive community treatment care and would need to cater for the large number of dual diagnosis patients identified in our study.

Based on our findings, a number of possible future directions could be explored in post-discharge service development. The most logical next step would be the exploration of an ACT-based critical time intervention for all post-discharge patients. This would allow for more comprehensive input to be given and case loads would be limited by pre-set discharge dates. Local ACT teams have proven their worth, but need to expand and evolve based on the requirements of the communities they serve.

References

1. Rabinowitz J, Lichtenberg P, Kaplan Z, Mark M, Nahon D, Davidson M (2001) Rehospitalization rates of chronically ill schizophrenic patients discharged on a regimen of risperidone, olanzapine, or conventional antipsychotics. *American Journal of Psychiatry*, 158, 266–269
2. Caton CLM (1995) Mental health service use among homeless and never-homeless men with schizophrenia. *Psychiatric Services*, 46, 1139–1143
3. Sledge WH, Dunn CL & Schmutte T (2008) Surprising predictor of rehospitalization. *Psychiatric Services*, 59, 577
4. Segal SP, Akutsu PD, Watson MA (2002) Involuntary return to a psychiatric emergency service within twelve months. *Social Work Health Care*, 35, 591–603
5. Niehaus DJH, Koen L, Galal U, Dhansay K, Oosthuizen PP, Emsley RA, Jordaan E (2008) Crisis discharges and readmission risk in acute psychiatric male inpatients. *BMC Psychiatry*, 8, 44
6. Naber D, Lambert M (2009) The CATIE and CUtLASS studies in schizophrenia: results and implications for clinicians. *CNS Drugs*, 23(8), 649-59
7. Kishimoto T1, Nitta M, Borenstein M, Kane JM, Correll CU (2013) Long-acting injectable versus oral antipsychotics in schizophrenia: a systematic review and meta-analysis of mirror-image studies. *Journal of Clinical Psychiatry*, 74(10), 957-65

8. Kane JM (2007) Treatment strategies to prevent relapse and encourage remission. *Journal of Clinical Psychiatry*, 68(14), 27–30
9. Schooler NR (2003) Relapse and rehospitalization: comparing oral and depot antipsychotics. *Journal of Clinical Psychiatry*, 64(16), 14–17
10. Emsley R, Chiliza B, Asmal L, Mashile M, Fusar-Poli P (2013) Long-acting injectable antipsychotics in early psychosis: a literature review. *Early Intervention in Psychiatry*, 7(3), 247-54
11. Chiliza B, Ojagbemi A, Esan O, Asmal L, Oosthuizen P, Kidd M, Gureje O, Emsley R (2014) Combining depot antipsychotic with an assertive monitoring programme for treating first-episode schizophrenia in a resource-constrained setting. *Early Intervention in Psychiatry*, Apr 1. doi: 10.1111/eip.12141
12. Killaspy H, Kingett S, Bebbington P, Blizard R, Johnson S, Nolan F, Pilling S, King M (2009) Randomised evaluation of assertive community treatment: 3-year outcomes. *British Journal of Psychiatry*, 195, 81-82
13. Sytema S, Wunderink L, Bloemers W, Roorda L, Wiersma D (2007) Assertive community treatment in the Netherlands: a randomized controlled trial. *Acta Psychiatrica Scandinavica*, 116:105–112
14. Petersen L, Jeppesen P, Thorup A, Abel MB, Øhlenschlaeger J, Christensen TØ, Krarup G, Jørgensen P, Nordentoft M (2005) A randomised multicentre trial of integrated versus standard treatment for patients with a first episode of psychotic illness. *British Medical Journal*, 17,331(7517), 602

15. Rosenheck RA, Dennis D (2001) Time-limited assertive community treatment for homeless persons with severe mental illness. *Archives of General Psychiatry* 58, 1073–1080
16. Dixon L, Goldberg R, Iannone V, Lucksted A, Brown C, Kreyenbuhl J, Fang L & Potts W (2009) Use of a critical time intervention to promote continuity of care after psychiatric inpatient hospitalization. *Psychiatric Services*, 60(4), 451-458
17. Haywood TW, Kravitz HM, Grossman LS, Cavanaugh JL Jr, Davis JM, Lewis DA (1995) Predicting the “revolving door” phenomenon among patients with schizophrenic, schizoaffective, and affective disorders. *American Journal of Psychiatry*, 152, 856–861
18. Weiden P, Glazer W (1997) Assessment and treatment selection for “revolving door” inpatients with schizophrenia. *Psychiatric Quarterly*, 68, 377–392
19. Burns T (2010) The rise and fall of assertive community treatment? *International Review of Psychiatry*, 22(2), 130–137
20. Burns T, Firn M (2002). *Assertive Outreach in Mental Health; a manual for practitioners*. Oxford university press.
21. Clausen Clausen H, Ruud T, Odden S, Benth JS, Heiervang KS, Stuen HK, Killaspy H, Drake RE, Landheim A (2016) Hospitalisation of severely mentally ill patients with and without problematic substance use before and during Assertive Community Treatment: an observational cohort study. *BMC Psychiatry*, 16, 125

22. Vigod SN, Kurdyak PA, Dennis C, Leszcz T, Taylor VH, Blumberger DM, Seitz DP (2013) Transitional interventions to reduce early psychiatric readmissions in adults: systematic review. *British Journal of Psychiatry*, 202, 187–194
23. Pettersen H, Ruud T, Ravndal E, Havnes I, Landheim A (2014) Engagement in assertive community treatment as experienced by recovering clients with severe mental illness and concurrent substance use. *International Journal of Mental Health Systems*, 8,40
24. Lund C, Petersen I, Kleintjes S, Bhana A (2012) Mental Health Services in South Africa; Taking Stock. *African Journal of Psychiatry*, 15, 402-405
25. <https://www.health-e.org.za/wp-content/uploads/2014/10/National-Mental-Health-Policy-Framework-and-Strategic-Plan-2013-2020.pdf>

Appendix

Supplementary Publications:

- 1) Botha U, Koen L, Oosthuizen P, Joska J, Hering L (2008) Assertive community treatment in the South African context. *African Journal of Psychiatry*, 11, 272-275
- 2) Lund C, Oosthuizen P, Flisher AJ, Emsley R, Stein DJ, Botha U, Koen L, Joska J (2010) Pathways to inpatient mental health care among people with schizophrenia spectrum disorders in South Africa. *Psychiatric Services*, 61(3), 235-40
- 3) Botha U (2015) Interventions at the Community Level, Chapter 49, *Primary Care Psychiatry*, Juta

Assertive community treatment in the South African context

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Abstract

Although the integration of psychiatric services into the community has potentially been beneficial to many patients, this transition has not been without problems. A major obstacle to establishing successful community-based treatment in South Africa has been that the reduction in number of inpatient beds did not coincide with the development of adequate community resources. This, in combination with our patients' poor socio-economic circumstances, has contributed to a substantial increase in the so-called "revolving door" or high frequency use phenomenon in state psychiatric facilities. Clearly, there is need for a renewed approach to address this problem in our setting. With this in mind the APH in the Western Cape appointed three community treatment teams in January 2007. This publication serves to give an overview of the Stikland Psychiatric Hospital team's experiences in the first 12 months since establishment. To date, we have been confronted by several challenges that complicate the successful implementation of an "assertive" outreach service in the South African context. However, there seems to be some hope as early findings demonstrate a reduction in number of admissions as well as inpatient days. Furthermore there has been a very positive response from service users, their families and other staff members leading us to conclude that this initiative seems to be a much needed step in the right direction.

Keywords: Community psychiatry; South Africa; Therapeutics

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Introduction

The face of psychiatry has changed considerably over the last twenty years. Perhaps the most significant change has been the shift to community-based services. Though the integration of services into the community has potentially given many patients the opportunity to live more functional and happy lives, this transition has not been without problems.¹⁻⁵

The provision of community-based care depends heavily on the availability of resources in the community. Such services include group homes, day centers, home-based care and clinics with staff trained in managing mental disorders. Although South Africa is not unique with regard to the difficulties experienced when setting up such services, it certainly has a unique combination of factors that affect and complicate the implementation thereof.⁶ Though attempts have been made worldwide - including South Africa - to streamline the setting up of such services, tremendous challenges remain. Singh et al highlighted some of these issues in a recent publication about community services in Australia. They concluded that although the principles of deinstitutionalization are sound, the implementation has been more troublesome than expected and the initial promise is yet to be realized.⁵

One of the major obstacles to successful community-based treatment in South Africa is the paucity of residential and day-care services.^{4,7,8} Patients are more often than not discharged into the care of family members who are themselves overwhelmed by socio-economic difficulties. Even though many patients in South Africa with severe and enduring mental illness do receive disability support in the form of a grant, this is most often not enough to alleviate the financial pressure on families. In fact, in many households the grant is the only regular form of cash income.

While families and communities are strained by the burden of managing individuals who are far from well with limited support, hospital staff battle with increased pressure on inpatient beds due to the dramatic reduction in number of beds that coincided with the shift to community-based care.^{7,8} In most facilities, there are now very few or no long term beds and only a small number of so-called medium term beds, which are often used for rehabilitation of patients who require longer hospital stay. The combination of these factors along with other socio-economic aspects, have contributed to the so-called "revolving door" phenomenon.^{9,10} This term refers to individuals who are frequently admitted to psychiatric institutions and remain well for only short periods of time.

The effect of revolving door patients on the acute inpatient system has repercussions for community care as well. Community mental health workers are left to try and stabilize these patients under difficult circumstances. Unfortunately this is often unsuccessful, resulting in readmission and further perpetuation of

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the revolving door pattern. Families are left feeling unsupported and are often expected to deal with mentally ill individuals who pose potential risks to themselves and others. Although the magnitude of the problem may vary between settings, this is a worldwide phenomenon.^{2,3,11} In some countries initiatives such as crisis resolution and assertive outreach were born out of the desperate need for additional support. The term assertive outreach is often used interchangeably with assertive community treatment and intensive case management, though small differences exist in the implementation of these services.^{2,12}

It is commonly accepted that assertive community treatment was initiated in its current form by Stein and Test in the 1980's.^{11,13} Their pilot project started as a temporary program known as Training in Community Living and attempted to offer additional support to patients with severe mental illness. However, it soon became clear that the positive outcomes initially experienced could not be sustained if the support was not continued. Since then, assertive outreach teams have been established in many centres in the United Kingdom, Australia and the US.^{2,13,14} According to Burns et al. assertive outreach should be an intensive, community-based program, which offers frequent and comprehensive support to patients in an attempt to primarily improve their quality of life.¹² Such teams follow a multi-disciplinary approach and typically share caseloads of 8-15 patients. Though the reduction of inpatient days is undoubtedly the most attractive outcome from a manager's perspective, available literature supports the notion that patients' quality of life may also improve, which in turn impacts dramatically on the morbidity associated with the illness.¹⁴

Clearly, there is need for a renewed approach to address the revolving door phenomenon facing many psychiatric hospitals in South Africa. However, the service models used in the developed world may not be realistic or feasible in our setting. With limited funds and strained resources, the key would be to find a more cost-effective way to provide a similar service to as many patients as possible, without compromising the quality of the service being delivered.

With this in mind, in January 2007, the Associated Psychiatric Hospitals in the Western Cape introduced a community treatment team for each of the three psychiatric hospitals' (Valkenberg, Lentegur and Stikland) catchment areas. Each team comprises a principal medical officer (PMO), a chief professional nurse (CPN) and a senior social worker (SSW). The purpose of the service is to provide a follow-up program for patients identified as being high frequency (revolving door) users of the acute inpatient system. Such a follow-up is aimed to be more comprehensive in comparison to standard care, facilitating existing services rather than duplicating them.

Service structure

The teams for the different catchment areas follow similar protocols. However, as each area has unique needs and constraints the teams have adapted their methods of working to accommodate these.

Generally, patients are identified on admission (using a modified version of Weiden's criteria) (see Tables I & II) and initial engagement of family and patient occurs during the inpatient stay.⁹ Once patients are discharged, they are actively followed up by the team. Although visit frequency is tailored according to patients' needs, the majority of patients are visited at least once every two weeks. About half of these contacts are in the form of home visits whilst other contacts are either at the Community Mental Health

Facility or at the Psychiatric Hospital, where medication is dispensed. Most contacts are performed by a designated key worker (SSW/CPN) whilst the PMO has monthly contacts during the first three months after which the frequency of visits is tapered to once every three months if the patient is stable. Contact between visits is maintained by means of telephone calls and family members are provided with contact numbers for the key workers during office hours. A crisis plan is made available for after hours' emergencies. If crises occur after hours, patients in the program bypass community services and are assessed directly via the existing after-hours service at the psychiatric facility.

In order to objectively evaluate the effectiveness of the service a concurrent research project was initiated recruiting control groups of both low and high frequency users. For these control groups demographic and clinical data are collected but no intervention is done and the groups receive treatment as usual. The research project is currently being run across all three sites and where patients are included all three teams follow the same structured approach.

Table I: Weiden's modified HFU criteria used to identify patients for inclusion in concurrent research component

<i>General criteria</i>
<input type="checkbox"/> Schizophrenia or Schizo-affective Disorder <input type="checkbox"/> Age 18-59 years (extremes included) <input type="checkbox"/> Needs current treatment with antipsychotic
Must meet General Criteria PLUS either (A) or (B) or (C) to be included
<input type="checkbox"/> ≥3 admissions in 18 months/≥ 5 in 36 months <input type="checkbox"/> ≥2 admissions in 12 months AND treated with clozapine <input type="checkbox"/> ≥2 admissions in 12 months AND ≥120 days in hospital

Table II: Weiden's original criteria for identifying revolving door patients⁹

Primary diagnosis of schizophrenia or schizoaffective disorder
AND
1) two hospitalizations in the last year,
OR
2) three hospitalizations in the last three years

Impressions and findings

Results from the formal research will only be available towards the end of 2008. However, the service has been running for 12 months now, enabling the Stikland team to report some preliminary impressions and results. At the time of writing this, 63 patients were actively being followed-up by this team. Of these, 42 were male and 21 female; 61 were unemployed at the time of inclusion and the majority were receiving disability grants. See table III for details about days spent in hospital prior to inclusion and post inclusion. To date, 16 patients have had readmissions. Without exception, all admissions have been shorter than previous admissions, leading to a clear reduction in the number of days spent in hospital compared to the 12 months prior to inclusion. Four patients who were previously unemployed are currently employed and one patient was placed in residential care. The other

62 patients all live with family or friends. Of the 63 patients, 36 readily admit to almost daily substance abuse and 11 have problematic metamphetamine abuse. Four patients have completed 12 months in the service, with only one of these being readmitted. Collectively, these four had 980 days spent in hospital (DIH) in the 12 months prior to inclusion and only 50 days in the 12 months after inclusion. As the other patients have been in the service for varying periods, DIH for this group should be viewed in this context. (see Table III)

As previously suspected we have been confronted by several challenges that complicate the successful implementation of this type of service in the South African context. Some of the most prominent impressions formed are:

Social circumstances:

The majority of the “revolving door” patients making use of public mental health services live in adverse social circumstances. Although the severity of adversity may vary, virtually all are unemployed and receive disability grants as their only form of income. Some live in informal settlements and many have overcrowded, chaotic environments. These impact on their illness and their ability to maintain compliance on medication and attend appointments. Financial difficulties are sometimes so severe that patients do not have regular meals or funds to travel to the clinics. Many patients do not have phone numbers and are therefore difficult to reach. In some cases there are safety concerns for staff when performing home visits, due to gangsterism and drug activity which are rife in many urban communities. Breen et al. recently commented on the relationship between mental disorders and social factors. They highlighted again the particular hardships facing mentally ill individuals in poor urban communities.⁽¹⁰⁾³

Multicultural environment:

In a unique society such as South Africa, where there are eleven official languages, we strive to deliver the best quality of care humanly possible and acknowledge that each individual has the right to receive care in his/her first language. Yet, this is a promise that is virtually impossible to keep even within the larger context of health services. Our team does not have access to any official translators and is therefore often dependant on individuals with little or no training to help with translations. There is no doubt that subtle manifestations of psychiatric illness may therefore be missed. This affects the team's ability to successfully engage patients and family members. Therefore in a small team that serves a multicultural grouping it is imperative to acknowledge the ways in which cultural differences may impact on: (1) the individuals' ability to engage with the service as well as (2) the key workers ability to provide the quality of care required to keep the individual well.

Structure of primary health facilities:

Unlike other countries, such as the UK, Community Mental Health facilities in South Africa form part of the general primary health clinics in communities. These clinics are often understaffed and very busy, resulting in long queues at pharmacies, chaotic waiting rooms and, for mental health service users, stigmatization by other patients. Also, consultation space in these clinics is often limited and not readily accessible teams. As may be imagined, these factors have a detrimental effect on patients' ability to attend appointments and remain compliant.^{3,15} General staff at times seem intolerant of the specific needs of mentally ill patients attending appointments. Patients are sometimes turned away without medication when forgetting their appointment cards at home and on one occasion a patient was asked to return a week later because his medication was out of stock, leaving him without medication.

Availability of medication:

In South Africa, not all medications are readily available in the public sector. Budget constraints affect the availability of atypical anti-psychotics (specifically in the Western Cape) other than Clozapine and there is no atypical depot available in the public health sector. Practitioners are therefore often limited in treatment choices for difficult-to-treat patients and in cases where compliance is an ongoing concern, patients are invariably placed on depot typical anti-psychotics, which can lead to unpleasant and even intolerable side-effects. Some medication may not be available at Community Clinics, or in some instances only specific strengths of a tablet may be available, leading to unnecessary large numbers of tablets being prescribed to maintain a therapeutic dose.

Transport difficulties:

When giving the choice many patients prefer to collect their medication directly from the psychiatric facility (i.e. one of the large psychiatric hospitals), due to stigmatizing, negative attitudes and long queues at the primary health facilities. However, few patients are able to afford these visits on a regular basis and they often need help to fund their transport. In many cases the ACT team has preferred to continue providing medication to patients to facilitate compliance. Occasionally patients reported attending clinic appointments, but on follow-up the team established that although the appointments were attended, medication was not issued. For patients with recurrent non-compliance, we have found that the only way to effectively assure compliance is if the team remains involved with the dispensing of medication.

Substance Abuse:

The Western Cape currently finds itself amidst an epidemic of metamphetamine abuse and all-in-all more than 60% of patients in

Table III: Summary data reflecting time patients have been included in service and days in hospital (DIH) in 12 months prior to inclusion as well as post inclusion

<i>Period in service</i>	<i>Number of patients</i>	<i>Number of readmissions</i>	<i>Total DIH 12 months pre- service</i>	<i>Total DIH since inclusion</i>
< 3 months	4	0	506	0
3-5 months	15	3	2037	71
6-8 months	25	7	3809	437
9-12 months	15	5	1830	270
>12 months	4	1	980	50

the service abuse substances. Many patients live in areas where gangsterism and drug use are part of daily life. Not only are these patients more difficult to engage, but they are invariably the individuals that require the most input from the team, have the most crises and the poorest adherence to treatment plans. Substance rehabilitation services have been difficult to access and often do not cater for the unique needs of dual diagnosis patients.

Quality vs Quantity:

It has been extremely difficult to establish what the optimal caseload would be to which an effective service can be provided. Clearly, it would be unrealistic to expect caseloads of 15 per key worker (as seen overseas) to be cost-effective and significantly impact on bed-pressure, yet large caseloads may undermine the quality required to significantly impact on patients' morbidity and may make the service obsolete. Therefore we have opted for 30-40 patients per key worker, with caseloads being shared by team members and visits being tailored according to patients' needs.

Community resources:

From our experience with this service, it is clear that a lack of community resources remains a major obstacle. There is a tremendous shortage of residential placement facilities for patients with severe mental illness and limited occupational therapy input at this level. Access to vocational rehabilitation programs is practically non-existent and substance rehabilitation units do not provide programs from which patients with severe mental illness can benefit. Also, as previously described, existing primary care centres do not facilitate streamlined access to mental health services. In short, though the deinstitutionalization of individuals with chronic mental illness may have been successful, serious reconsideration needs to be given to the structure of community facilities and the development of resources for individuals with chronic mental disorders. This opinion was shared by Singh et al. who highlighted some of the simplified premises under which deinstitutionalization was implemented worldwide.⁵

There is no doubt that a combination of these shortcomings contributes greatly to the pattern of recurrent relapses and readmissions, which some may argue, has been even more harmful to our patients than the chronic institutionalization that preceded this era.

Conclusion

One could ask whether this model is the most appropriate deployment of resources in South Africa. Traditionally Community Mental Health Services have been very understaffed (proportionally even more so than the general level of understaffing). Redress for such does not happen overnight and a team that can therefore be deployed across facilities has a greater overall impact. Furthermore, as reported preliminary results indicate reduced number of admissions and shorter stays in hospital. Early indicators of social functioning also show improvement in occupational status for some patients. Feedback from carers and community mental health workers has indicated that teams reduce pressure on existing services and families.

Clearly, in spite of the issues that still exist, the initiative seems to be a much needed step in the right direction. Interestingly, current literature seems to support the view that assertive treatment approaches are more likely to succeed in under-resourced settings where standard community services are less comprehensive.¹⁶ When one looks at the key elements of the ACT

model as set out by Burns et al.² (Table IV), local teams follow more or less the same modus operandi, deviating primarily in the size of caseloads and continuity of care. Wider implementation of the principles of assertive outreach, with more teams in more areas should be considered in the planning of future services.

Table IV: Key Elements of ACT model (Adapted from Test 1992 by Burns et al.²)

- ☐ A core service team provides bulk of clinical care.
- ☐ Primary goal is improvement in patients' functioning.
- ☐ Patient is assisted directly in symptom management.
- ☐ Ratio of staff to patient should be small (no greater than 10-15:1).
- ☐ Each patient is assigned a key worker responsible for comprehensive care.
- ☐ Treatment is individualized between patients and over time.
- ☐ Patients are engaged and followed up over time.
- ☐ Treatment is provided in community settings.
- ☐ Care is continuous over time and across functional areas.

References

- ☐ Arboleda-Florez J. On the evolution of mental health systems. *Curr Opin Psychiatry* 2004;17:377-380.
- ☐ Burns T, Firth M. *Assertive Outreach in Mental Health; a manual for practitioners*. Oxford university press 2002.
- ☐ Breen A, Swartz L, Flisher AJ, Joska JA, Corrigan J, Plaatjies L et al. Experience of mental disorder in the context of basic service reforms: The impact on caregiving environments in South Africa. *Int J Environ Health Res* 2007; 17(5):327-334.
- ☐ Lazarus R. Managing de-institutionalization in a context of change: The case of Gauteng, South Africa. *S Afr Psychiatry Rev* 2005;8:65-69.
- ☐ Singh BS, Castle DJ. Why are community psychiatry services in Australia doing it so hard? *Med J Aust* 2007;187(7):410-2.
- ☐ Stein DJ, Allwood C, Emsley RA. Community care of psychiatric disorders in South Africa – lessons from research on deinstitutionalization. *SAMJ* 1999; 89(9):942-943.
- ☐ Lund C, Flisher AJ (2003) Community/hospital indicators in South African public sector mental health services. *J Ment Health Policy Econ* 2003;6(4):181-187.
- ☐ Lund C, Flisher AJ. Norms for mental health services in South Africa. *Soc Psychiatry Psychiatr Epidemiol* 2006;41(7):587-94.
- ☐ Weiden P, Glazer W. Assessment and treatment selection for „revolving door“ inpatients with schizophrenia. *Psychiatr Q* 1997;68:377-392.
- ☐ Gastal FL, Andreoli SB, Quintana MIS, Gameiro MA, Leite SO, McGrath J. Predicting the revolving door phenomenon among patients with schizophrenic, affective disorders and non-organic psychoses. *J Public Health* 2000;34(3):280-5.
- ☐ Lamb RH, Bachrach L. Some perspectives on Deinstitutionalization. *Psychiatr Serv* 2001; 52 (8):1039-1045.
- ☐ Smith L, Newton R. Systematic Review of case management. *Aust N Z J Psychiatry* 2007;41(1)2-9.
- ☐ Dixon L. *Assertive Community Treatment: twenty-five years of gold*. *Psychiatr Serv* 2000; 51(6):759-765.
- ☐ Marshall M, Lockwood A. *Assertive Community Treatment for people with severe mental disorders*. *Cochrane Database Syst Rev* 2000;(2):CD001089.
- ☐ Breen A, Swartz L, Joska JA, Flisher AJ, Corrigan J. Adherence to treatment in poorer countries: A new research direction? *Psychiatr Serv* 2007; 58(4):567-568. Tyrer P. The future of specialist community teams in the care of those with severe mental illness. *Epidemiol Psychiatr Soc* 2007; 16(3):225-30

Pathways to Inpatient Mental Health Care Among People With Schizophrenia Spectrum Disorders in South Africa

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Objective: This study examined service utilization patterns and pathways to specialist mental health services among individuals with schizophrenia spectrum disorders in the Western Cape, South Africa, an area that has undergone deinstitutionalization since the mid-1990s. **Methods:** Individuals who were consecutively admitted to any of the three psychiatric hospitals in the Western Cape from February 2007 to January 2008 were interviewed. Data on demographic characteristics, psychiatric history, service utilization, and pathways to care were gathered from service users, their relatives or associates, and hospital files. Uni-variate and multivariate analyses examined differences between high- and low-frequency service users. **Results:** Of the total sample (N=152) most were first seen at the primary care level (62%). However, very few received treatment at this level (26%), and many (22%) were admitted directly to the psychiatric hospital, bypassing other treatment options. These service utilization patterns differ from the requirements listed in the recently adopted Mental Health Care Act (2002), which states that unless a patient has been recently discharged, he or she should be admitted for 72 hours of observation before referral to psychiatric hospitals. Compared with low-frequency service users, high-frequency users were younger, had lower income, tended to rely more on disability benefits, and were more likely to bypass other levels of care and be admitted directly to the psychiatric hospital. Poor medication adherence was the most likely precipitant for the episode of illness among all users. **Conclusions:** The study highlights the inadequacy of current community mental health services in providing for the needs of people with severe mental illness. In South Africa, as in many other middle-income countries, there is an urgent need to develop community-based care. (*Psychiatric Services* 61:235–240, 2010)

Mental health care systems in low- and middle-income countries are under-resourced (1,2). In order to maximize the available resources, it is important to understand service utilization patterns, particularly the manner in which service users gain access to care in these countries. Service utilization data, such as pathways to care, delays in treatment, and access to specialist services, are seldom gathered routinely and yet are vital for service planning (3,4).

Service access and use are important issues in the province of the Western Cape in South Africa, which has been undergoing deinstitutionalization since the mid-1990s, in keeping with international trends (5,6). In 1995 there were 61 beds per 100,000 population in psychiatric hospitals in the province, excluding beds for people with intellectual disabilities (7). By 2000 this ratio had fallen to 49 beds per 100,000, and by 2005 it had decreased further to 39 per 100,000, a total reduction of 36% in ten years

(8). However, as in many other countries, the reduction of bed numbers in psychiatric institutions has not been accompanied by the development of adequate community mental health services (8,9). Recent data indicate high rates of relapse and a “revolving door” pattern of care, described as repeated readmissions following brief

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periods in the community, particularly among people with severe mental illness (10). Patterns of service utilization in the Western Cape have also been influenced by an escalating demand for services because of the impact of HIV-AIDS and methamphetamine dependence (11,12). Reforms in the legislative environment—through the Mental Health Care Act (2002)—require that mental health services should be integrated into primary and secondary care and that patients should use tertiary care (psychiatric hospitalization) as a last resort.

Studies from high-income countries have demonstrated marked differences in service utilization patterns among high- and low-frequency service users (13). In the context of deinstitutionalization in low- and middle-income countries, it is important to track service needs and access to care among high-frequency service users to assess the ability of community services to support people with a high need for mental health services outside of hospital settings. Little is known about the differences in service utilization between high- and low-frequency service users in low- and middle-income countries, particularly in Africa.

The purpose of this study was to report on service utilization patterns and pathways to specialist mental health services among individuals with schizophrenia spectrum disorders in the Western Cape, South Africa. A secondary purpose was to examine the differences between high- and low-frequency service users in this context.

Methods

Setting

The study took place at the three psychiatric hospitals in the Western Cape Province of South Africa: Lentegeur, Stikland, and Valkenberg Hospitals. Each caters to a catchment area containing approximately 1,500,000 people (14). Each catchment area consists of two regions, one in the Cape Town metropolis and one in a contiguous rural region. Public-sector mental health services in the urban areas are provided at community mental health clinics situated in community mental health centers (primary care), district (general) hospitals (secondary care), and the three psychiatric hospitals mentioned above (tertiary care). Each community

mental health clinic is staffed by a professional nurse four days per week and by a psychiatric registrar (resident physician) three hours per week. When possible, patients with stable conditions are discharged from the mental health clinic and receive the required mental health services in general community health services, located in clinics and community health centers. In these resource-limited clinics, regular follow-up of patients who default from treatment is often not possible, and long waiting times are common. Patients requiring admission to a psychiatric hospital typically present first to a community mental health clinic. Thereafter, they are referred either to a district hospital for medical assessment and a 72-hour observation in accordance with the Mental Health Care Act (2002) or directly to the psychiatric hospital if they have recently been discharged from such a hospital. Behaviorally disturbed patients in the community are often brought to the psychiatric hospital by police services. Although the policy guidelines detail the steps that persons can use to receive mental health services, the guidelines do not provide for those who require intensive community support. In addition to these service constraints, the Cape Town urban population is generally marked by economic deprivation, with high levels of poverty, crime, and violence (15).

Sample

Individuals who were consecutively admitted to any of the three psychiatric hospitals in the Western Cape from February 2007 to January 2008 were interviewed. In order to be included in the study, participants had to be aged 18 to 59 years; have a current diagnosis of schizophrenia, schizophreniform disorder, or schizoaffective disorder; require treatment with antipsychotic medication in the opinion of the investigators; and be able to give written, informed consent to participate. Exclusion criteria were the presence of moderate or severe intellectual disability, admission because of a severe medical illness other than a psychiatric diagnosis, and a finding that the patient did not expect to reside in the Cape Town metropolis in the following year.

Procedure

Data were gathered from service users, their relatives or associates, and hospital files. All service users and other informants were interviewed by using a semistructured interview to establish the following: demographic information; personal, medical, and family history; psychiatric history, including number of relapses; initial and current diagnosis; age of onset of psychosis; history of previous admissions and treatment; current treatment; treatment adherence and reasons for a lack thereof; and any comorbid medical conditions. Data collected from the hospital files were largely of a clinical nature. Concordance between respondents and hospital files was not formally evaluated, but there was a reasonable level of concordance. Where there was discordance between the self-report and file information, the respondent report was taken as the more accurate for personal or demographic data, and the file was taken as the best source for clinical data. In addition, questionnaires eliciting data on substance abuse and pathways to care were administered. The box on the next page shows the questions used to determine the pathways to care.

Any of the above information that could not be gathered as a result of the user's mental state at admission was gathered at a later stage during the hospital admission, up to the date of discharge. All participants were classified as high- or low-frequency users of psychiatric services according to a modified version of the revolving-door criteria of Weiden and Glazer (13). Although the Weiden and Glazer criteria require admission resulting from exacerbation of schizophrenia or schizoaffective disorder and at least one previous admission in the past 12 months or two previous admissions in the past three years, our criteria were somewhat more strict in terms of the frequency of previous admissions. Our criteria included any of the following: first, three or more admissions in the past 18 months or five or more in the past 36 months; second, two or more admissions in the past 12 months and treated with clozapine; and third, two or more admissions in the past 12 months and 120 days in the hospital or longer. These criteria were used per

recommendations from clinicians from all three psychiatric hospitals because, compared with countries where community services are relatively well developed, in South Africa patients have poor support in the community and are more likely to be admitted to a hospital.

Analysis

All data were entered into a database. The two groups (high- and low-frequency users) were compared in relation to the above listed putative risk factors. Categorical variables were compared by using chi square analysis or Fisher's exact test. In multivariate analysis, the model was adjusted for gender, ethnic group, marital status, education, residential area, and main source of income. Continuous variables were compared using Student's t tests. Correlations between continuous variables were calculated using Spearman's rank order correlation coefficients. All statistical tests were two-sided, and a significance level of .05 was used throughout.

Ethical considerations

The study was conducted in accordance with the International Conference of Harmonisation's Good Clinical Practice guidelines (16) and the Declaration of Helsinki. All participants gave written, informed consent before discharge. If users were unable to give consent because of illness, data were still gathered and consent sought from users when possible. If the user did not give consent by the time of discharge, study information for that user was not entered into the database and was deleted. When possible, a caregiver or associate of the user also signed the informed consent as a witness. To ensure confidentiality each patient was allocated a study number, which was the only identifying information entered into the database. Patient identifiers, linked to the study participant number, were kept in a separate, password-protected file that could be deleted once data processing was completed. The study was approved by the Faculty of Health Sciences Research Ethics Committee at the University of Cape Town and the Faculty of Health Sciences Committee for Human Research at Stellenbosch University.

Questions used to determine the pathways to care for people with schizophrenia spectrum disorders in the Western Cape, South Africa

All settings

What was the duration of the index episode of untreated psychosis until first contact with

Health services? Mental

health services? First

admission?

First treatment with antipsychotic medication?

Who initiated the help seeking for the current episode?

What prompted help seeking?

Did the user consult a nonmedical practitioner (such as a traditional or faith healer) before admission?

Primary care services

Was the user seen at this level?

Did the user receive treatment at this level?

What was the nature of the treatment?

Was the user admitted to a district hospital, and if so, for how long?^a

Was there a delay of more than 24 hours in referral from the primary care level to the next level of care?

Secondary care services

Was the user seen at this level?

Was the user admitted to a hospital facility at this level?

Tertiary care services

Did the user bypass lower levels of care?

Who was the referring agent?

What was the main reason for referral? Did

admission occur during office hours?

Were the police involved in bringing the user to the hospital?

Was the user accompanied by a caregiver?

Was there a bed available?

How was the user classified on admission?

Was the hospital informed of the pending admission before arrival?

Did the user have a referral letter?

How long had it been since the user's previous admission (in days)?

Was the user discharged as an emergency discharge on the last admission?

^a District hospitals are the first point of inpatient hospital admission within the primary care system.

Results

The sample consisted of 101 high-frequency users and 51 low-frequency users (N=152) (Table 1). The mean±SD age for the sample was 35.03±10.10 years. High-frequency users were significantly younger than low-frequency users (33.57±10.00 years versus 37.80±9.77 years) (p=.02). High-frequency users were significantly more likely to be single, but this association was no longer significant in the multivariate analysis. The mean monthly income of the sample was R766±388 (approximately \$79 in the United States), and high-frequency users had significantly lower income than low-frequency users (R715±340 versus R872±460) (p=.03). High-frequency users also tended to rely more on disability benefits for their

income, although this difference was not statistically significant. High-frequency users were more than eight times less likely to earn a salary. Low-frequency users were almost four times more likely to have experienced a life event as a precipitating factor in their admission. High-frequency users were significantly more likely to have a diagnosis of schizoaffective disorder, and low-frequency users were significantly more likely to have a diagnosis of schizophrenia.

The majority of service users in the sample were seen at the primary care level before admission to a psychiatric hospital (N=84, 62%). (All data were not available for all people.) However, only 35 (26%) received any form of treatment there, with the most common treatment being anxiolytics

Table 1

Sociodemographic and clinical characteristics of people with schizophrenia spectrum disorders in the Western Cape, South Africa, who were hospitalized between February 2007 and January 2008, by frequency of service use^a

Characteristics	Total sample (N=152)		High frequency (N=101)		Low frequency (N=51)			Unadjusted		Adjusted ^b	
	N	%	N	%	N	% ^p		OR	95% CI	OR	95% CI
Gender (N=146)											
Male	107	73	73	77	34	67	.19	1.66	.78–3.51	.83	.28–2.47
Female	39	27	22	23	17	33					
Marital status (N=142)											
Single	110	77	78	84	32	65	.01	2.76	1.25–6.09	.92	.22–3.88
Married	16	11	7	8	9	18	.06	2.76	.99–7.71	1.85	.29–11.78
Divorced	13	9	7	8	6	12	.36	1.17	.55–5.36	— ^c	— ^c
Widowed	2	1	1	1	1	2	— ^c	— ^c	— ^c	— ^c	— ^c
Cohabiting	1	1	0	—	1	2	— ^c	— ^c	— ^c	— ^c	— ^c
Level of education (N=145)											
None		1	1	1	1	0	—	.16			
Elementary	46	32	35	37	11	22	.05	2.16	.99–4.70	.53	.05–5.23
Grade 10	70	48	38	40	32	63	.01	2.48	1.24–4.97	.91	.10–8.29
Completed high school	24	17	18	19	6	12	.24	1.78	.66–4.76	.37	.03–4.38
University degree	2	1	1	1	1	2	— ^c	— ^c	— ^c	— ^c	— ^c
Technical	2	1	1	1	1	2	— ^c	— ^c	— ^c	— ^c	— ^c
Residential area (N=150)											
Urban	143	95	98	97	45	92	.17	2.90	.66–12.72	12.26	1.15–131.05
Rural	7	5	3	3	4	8					
Ethnicity (N=150)											
Black	28	19	22	22	6	12	.15	2.00	.76–5.23	.20	.02–2.17
Colored ^u	114	76	76	75	38	78	.76	1.14	.51–2.55	.21	.03–1.80
White	7	5	3	3	4	8	.17	2.90	.66–12.72	— ^c	— ^c
Other	1	1	0	—	1	2	— ^c	— ^c	— ^c	— ^c	— ^c
Source of income (N=135)											
Disability benefits	105	78	72	80	33	73	.38	1.45	.63–3.36	.12	.01–1.61
Family	25	19	17	19	8	18	.88	1.08	.43–2.73		
Salary	5	4	1	1	4	9	.03	8.68	1.33–56.79		
Diagnosis (N=136)											
Schizophrenia	90	66	53	58	37	82	<.01	3.32	1.42–7.72		
Schizophreniform disorder	1	1	1	1	0	—					
Schizoaffective disorder	45	33	37	41	8	18	.01	3.17	1.36–7.39		
Comorbid diagnosis of substance abuse (N=125)											
Yes	63	50	47	57	16	38	.08	1.91	.92–3.99		
No	62	50	36	43	26	62					
Precipitating factors for current psychotic episode (N=136)											
None	6	4	4	4	2	4	.99	1.01	.18–5.74		
Substance abuse	41	30	32	35	9	20	.06	2.17	.94–5.01		
Poor medication adherence	71	52	48	53	23	51	.86	1.07	.52–2.18		
Life events	18	13	7	8	11	24	.01	3.88	1.46–10.35		

^a All data were not available for all people

^b Adjusted for gender, ethnic group, marital status, education, residential area, and main source of income

^c Values were not calculated for certain cells in which the number of users involved was so small as to not alter the outcomes of the univariate and multivariate analyses.

^u The term “colored” refers to respondents of mixed ethnic descent. Although problematic, these categorizations continue to be used for official purposes to designate racial or ethnic group membership in South Africa.

(N=20, 14%). Very few received antipsychotic medication at the primary care level. A similar trend was noted at the district and regional hospital level (secondary care level), where 38 patients (28%) were seen, but only 29

(21%) were admitted. Of the total sample, 30 (22%) were admitted directly to the psychiatric hospital, bypassing other treatment options. Low-frequency users were more likely to be seen at the primary care level (N=33,

73%), whereas high-frequency users were more likely to bypass other levels of care and go to the psychiatric hospital directly (N=26, 29%) (p=.009). More than 48 (36%) admissions occurred after hours, the most likely

Table 2

Variables associated with access to and delays of treatment for people with schizophrenia spectrum disorders in the Western Cape, South Africa, by frequency of service utilization

Variable	High frequency		Low frequency		p
	M	SD	M	SD	
Distance of travel to nearest mental health institution (km)	21.15	10.96	15.24	8.62	<.01
Days from first symptom					
Until first contact with health services	45.23	55.27	96.89	222.51	.04
Until first contact with mental health services	46.75	55.59	96.98	222.48	.05
Until admission to the psychiatric hospital	45.97	54.83	101.55	223.70	.03
Days symptoms present before seeking help	29.22	40.31	54.25	63.39	.01
Days admitted to secondary care	1.19	3.04	.23	.70	.05
Days since last hospital admission	173.33	110.07	1,239.13	1,464.27	<.01

cause of which was delays at the primary care level (N=20, 43%). The vast majority of patients (N=123, 90%) were involuntarily admitted. Police were involved in 69 (51%) admissions. Poor medication adherence was the most likely precipitant for the episode of illness, followed by substance abuse (in the case of high-frequency users) and life events (in the case of low-frequency users).

There were a number of important differences between high- and low-frequency users in access to and delays in treatment (Table 2). High-frequency users were admitted sooner after their first symptoms. Although high-frequency users tended to live further away from the hospital in which they received care, they tended to get to help sooner—that is, delays in treatment were shorter. High-frequency users were more likely to have been classified as an “emergency discharge” at their last admission. Emergency discharge occurs when the patient has residual symptoms and is not well enough to be discharged in the opinion of the clinician but is discharged because of the needs for limited beds and because he or she is less unwell than service users waiting to be admitted.

Discussion

The study highlights the inadequacy of the current system of primary mental health care in providing for the needs of service users, particularly high-frequency users, in Western Cape, South Africa. Although the majority of patients were seen at the primary care

level, very few received appropriate treatment at this level. Thus although services at the primary care level are accessible, they are clearly not equipped to be the main source of mental health care for people with severe mental illness. This finding points to crucial training needs among primary care staff and the importance of developing resources and capacity for mental health care at this level. The findings also underscore the need to strengthen community mental health services, including assertive community treatment (ACT) teams, particularly for high-frequency users.

Several patients were seen at the district or regional hospital level and not admitted. This is striking in light of the provisions of the Mental Health Care Act (2002), which requires that unless a patient has been recently discharged, he or she should be admitted for 72 hours of observation before referral to psychiatric hospitals. It is clear from these findings that the provisions of the act are not being implemented, either because staff do not have the skills or capacity to admit patients or because facilities are not available. Routine information systems to monitor these trends need to be strengthened.

The study also points to important differences between high- and low-frequency service users in access to treatment and delays in seeking such treatment. These findings are consistent with other studies, which have found that predictors of high-frequency service use include more previous admissions, longer length of stay, and a diagnosis of schizophrenia (17,18). In

this study reasons for the more direct access to psychiatric hospitals by high-frequency users include the possibility that this group of users was known to both caregivers and service providers as having more severe symptoms and that caregivers or service users who are familiar with services could gain access to tertiary care more readily. There is agreement among service providers that users who have been discharged more recently may be referred directly to psychiatric hospitals and are not required to enter care at the primary care level. A more formal designation of what constitutes a high-frequency user may therefore be desirable to improve access to the appropriate level of care. Given the evidence of increased substance abuse among high-frequency users in this study, there is a need for interventions that target substance abuse in community service settings.

Internationally, the findings of this study indicate important differences between (and within) African countries in pathways to care (19,20). In the Western Cape province there are relatively well-resourced public-sector mental health services, compared with other provinces in South Africa and other African countries (2,8,21). However, the preponderance of psychiatric hospitals as a locus of care in the Western Cape leads to a tendency for service users to be referred directly to these facilities, particularly when services are not available at the primary or secondary levels.

The high level of police involvement

and the high proportion of involuntary admissions also indicate the need for training among the police regarding the provisions of the Mental Health Care Act and working with persons with mental illness.

The leading role of poor medication adherence in precipitating illness episodes for both high- and low-frequency users may indicate the potential benefits of community mental health services, such as ACT, in monitoring and supporting service users in the community and preventing re-lapse. ACT teams have been found to be particularly effective in meeting the needs of high-frequency users in other countries, reducing length of hospital stay by up to 50% according to one meta-analysis (22). In the Western Cape, early evaluations of the newly established ACT program show a reduction in inpatient admissions and length of stay, as well as improved user, family, and staff satisfaction (23).

There are several limitations to the study. First, the small sample means that any conclusions drawn from the study should be interpreted with caution. Second, some of the exclusion criteria (such as being a resident outside the Cape Town metropolis) may have biased the sample characteristics and access to services. Third, the survey was conducted with service users who were admitted to a psychiatric hospital. The findings regarding service utilization patterns therefore cannot be generalized to those who have not been admitted to a psychiatric hospital. Fourth, the retrospective nature of some of the data implies that they may have been subject to recall bias. This bias was minimized by using multiple sources of data.

Conclusions

Although the majority of service users in this study received health care services at the primary care level, very few of them received adequate mental health care at this level and tended to find mental health care at the specialist level. The study highlights the inadequacy of current community mental health services in providing for the needs of people with severe mental illness. This study also shows important differences between high- and low-frequency users, namely that high-frequency users were younger, had lower income, tended to rely more on disability benefits, and were more likely to bypass other levels of care and be admitted directly to a psychiatric hospital.

In South Africa, as in many other middle-income countries, there is an urgent need to develop community-based care.

In the case of the Western Cape province these services are needed to supplement a relatively well-established psychiatric hospital infrastructure. This finding is consistent with previous South African mental health services research (8,9). It is also consistent with challenges facing middle-income countries that have been identified by the World Health Organization, namely the need to provide community care facilities, integrate mental health into primary health care, and ensure availability of essential psychotropic drugs in all health care settings (6).

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References

- Saxena S, Thornicroft G, Knapp M, et al: Resources for mental health: scarcity, inequity and inefficiency. *Lancet* 370:878–889, 2007
- Atlas: Mental Health Resources in the World. Geneva, World Health Organization, 2005
- Gater R, De Almeida E, Sousa B, et al: The pathways to psychiatric care: a cross-cultural study. *Psychological Medicine* 21:761–774, 1991
- Mental Health Information Systems: Mental Health Policy and Service Guidance Package. Geneva, World Health Organization, 2005
- Geller JL: The last half-century of psychiatric services as reflected in Psychiatric Services. *Psychiatric Services* 51:41–67, 2000
- World Health Report 2001: Mental Health: New Understanding, New Hope. Geneva, World Health Organization, 2001
- Ensink K, Leppin PH, Robertson BA: Mental health services in South Africa. *South African Medical Journal* 97:4183–4190, 2003
- Lund C, Kleintjes S, Kakuma R, et al: Public sector mental health systems in South Africa: inter-provincial comparisons and policy implications. *Social Psychiatry and Psychiatric Epidemiology*, Epub ahead of print, Jun 9, 2009
- Lund C, Flisher AJ: Community/hospital indicators in South African public sector mental health services. *Journal of Mental Health Policy and Economics* 6:181–187, 2003
- Temmingh H, Oosthuizen P: Pathways to care and treatment delays in first and multi episode psychosis. *Social Psychiatry and Psychiatric Epidemiology* 43:727–735, 2008
- The Western Cape Antiretroviral Programme: Monitoring Report, 2006/7. Cape Town, South Africa, Provincial Government of the Western Cape, Department of Health, 2007
- Pluddemann A, Myers BJ, Parry CD: Surge in treatment admissions related to methamphetamine use in Cape Town, South Africa: implications for public health. *Drug and Alcohol Review* 27:185–189, 2008
- Weiden P, Glazer W: Assessment and treatment selection for “revolving door” inpatients with schizophrenia. *Psychiatric Quarterly* 68:377–392, 1997
- Statistics South Africa. Census 2001. Pretoria, Statistics South Africa, 2001. Available at www.statssa.gov.za/census01/HTML/default.asp
- Ndegwa D, Horner D, Esau F: The links between migration, poverty and health: evidence from Khayelitsha and Mitchell’s Plain. *Social Indicators Research* 81:223–234, 2007
- Guideline for Good Clinical Practice E6(R1). Geneva, International Conference on Harmonisation of Technical Requirements for Registration of Pharmaceuticals for Human Use, 1996. Available at www.ich.org/cache/compo/276-254-1.html
- Fisher S, Stevens RF: Subgroups of frequent users of an inpatient mental health program at a community hospital in Canada. *Psychiatric Services* 50:244–247, 1999
- Korkeila JA, Lehtinen V, Tuori T, et al: Frequently hospitalised psychiatric patients: a study of predictive factors. *Social Psychiatry and Psychiatric Epidemiology* 33:528–534, 1998
- Abiodun OA: Pathways to mental health care in Nigeria. *Psychiatric Services* 46:823–825, 1995
- Bekele YY, Flisher AJ, Alem A, et al: Pathways to psychiatric care in Ethiopia. *Psychological Medicine* 39:475–483, 2009
- Flisher AJ, Lund C, Funk M, et al: Mental health policy development and implementation in four African countries. *Journal of Health Psychology* 12:505–516, 2007
- Bond GR, McGrew JH, Fekete DM: Assertive outreach for frequent users of psychiatric hospitals: a meta-analysis. *Journal of Mental Health Administration* 22:4–16, 1995
- Botha U, Koen L, Oosthuizen P, et al: Assertive community treatment in the South African context. *African Journal of Psychiatry* 11:272–275, 2008

Chapter 49

Interventions at the community level

*Ulla Botha***Overview**

The last 50 years have seen significant changes in the field of psychiatry. One important change has been the process of de-institutionalisation, started in the 1960s in western Europe, the USA and other developed countries. Many countries have been relatively successful in implementing community-based psychiatric care and this contributed significantly to the destigmatisation of psychiatry. Unfortunately, the process has not been without pitfalls. The move to community-based psychiatric services went hand in hand with significant reductions in inpatient beds. The premise was that these beds would in turn be provided in the community in the form of residential facilities, with different levels of care according to patients' needs. These types of facilities proved to be more expensive than anticipated and the implications of establishing them grossly under-estimated.

The main aim of a community-based service is to provide affordable and accessible psychiatric care to patients in the least restrictive setting possible.

Introduction

Community psychiatry comprises the principles and practices needed to provide mental health services for a local population by:

- ☐ establishing population-based needs for treatment and care
- ☐ providing a service system linking a wide range of resources of adequate capacity, operating in accessible locations
- ☐ delivering evidence-based treatments to people with mental disorders.

Many countries have experienced problematic repercussions as a result of the dramatic reduction of inpatient beds which coincided with de-institutionalisation. The absence of appropriate community-based care leads to an increased number of mentally ill individuals in other settings, importantly in prisons, and in homelessness. Similarly, the significant reduction of acute inpatient beds gave rise to the so-called 'revolving door' phenomenon. These are patients who have frequent relapses and remain well for short periods of time before requiring readmission. Commonly these patterns are exacerbated by inadequate placements that provide limited support to patients, and often contribute to the stress that may trigger relapses. In an attempt to address the pressure these patients place on inpatient services, and to stabilise patients optimally in the community, several countries have introduced a range of innovative community-based interventions. These aim to provide more comprehensive care to patients who may require additional input to remain well. Most of these services are community based and aim to provide more intensive follow-up to patients in

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an attempt to optimise their functioning and to avoid readmission. Many of these interventions have been implemented under different names, including assertive outreach, intensive case management and assertive community treatment, but essentially they all provide more comprehensive and intensive follow-up to selected, particularly vulnerable patients with mental illnesses.

The assertive community treatment (ACT) model follows a team-based approach where designated key workers provide comprehensive input to patients. The team sharing the caseloads hold frequent meetings to discuss patients. Key workers are expected to work across disciplines but may request assistance from other team members. The key worker functions as care co-ordinator in managing all aspects of the patient's treatment plan. This includes any medical, vocational and social needs in addition to attending to psychiatric problems. The service thus offers community-based, comprehensive and frequent follow-up treatment for patients with chronic mental illness.

Features of the ACT model can be summarised as follows:

- ☐ A core service team is responsible for helping the patient meet his or her needs and provide the bulk of clinical care.
- ☐ The primary goal is improved functioning in all life spheres.
- ☐ The patient is assisted directly in symptom management.
- ☐ Patient ratios should be in the region of 10–15:1.
- ☐ Each patient is assigned a key worker who is responsible for ensuring comprehensive assessment, care and review by themselves or the team.
- ☐ Treatment is individualised between patients and over time.
- ☐ Patients are engaged and followed-up in an assertive manner.
- ☐ Treatment is provided *in vivo*, in community settings.
- ☐ Care is continuous both over time and across functional areas.

Currently, there is considerable controversy in the international literature surrounding the efficacy and cost-effectiveness of ACT. This controversy has arisen amidst contradictory evidence in recent publications from the United Kingdom, reporting limited effect of ACT programmes when compared to standard care services in the area. These findings stand in contrast to publications from the USA, Australia and European countries that report favourable outcomes. One enduring criticism against ACT has been the cost–benefit ratio of the intervention.

The UK launched 300 ACT teams countrywide in 1998 based on the reported successes of pilot projects; based on recent reports, current opinion is that this approach may no longer be justified. On the other hand, recent German and Danish studies reported favourable outcomes. Primary outcomes are often measured in terms of reduction in inpatient days and length of stay and are clearly important from a cost-saving perspective. However, assertive interventions consistently produce a range of secondary gains that are sometimes considered less important but contribute significantly to improvements in overall patient functioning.

Patients in assertive services consistently report greater satisfaction with services and engagement with services is improved. These two factors impact on patients' adherence to treatment plans. Clearly, patients who are satisfied with their treatment plan, attend appointments regularly and have a better relationship with their treatment team, will be more likely to take medication regularly.

and are more likely to communicate concerns and reservations, thus fostering a more effective therapeutic alliance. Assertive interventions have also been shown to reduce symptomatology in some cases. Where symptoms have been recorded with scales such as the Positive and Negative Symptom Scale (PANSS), lower degrees of positive and negative symptoms have been recorded, which is likely to be due to better compliance and support and this in turn is likely to lead to a reduction in readmissions.

Psychiatric services in some developing countries have had similar experiences to those of developed countries with regard to the high demand for inpatient services and recidivism. Predictably the impact of de-institutionalisation became evident only in retrospect, and has placed a significant burden on already stressed community services. Community psychiatric services in South Africa are based in primary healthcare institutions and have to contend with a lack of resources, particularly services offering residential specialised care. In many cases these services still rely heavily on resources that are only accessible through hospital-based care. High rates of unemployment, poor social circumstances, substance abuse and high levels of violence and crime further contribute to the challenges mental health services face in developing countries.

Characteristics of ‘revolving door patients’ in the South African setting are similar in profile to those described in the international literature: the paucity of resources are driving forces behind high frequency use, in addition to poor medication adherence and substance abuse.

Modified assertive community treatment in South Africa

In South Africa, community mental health services are similarly structured to the UK model. Community mental health teams (CMHTs) serve well-defined catchment areas. The CMHTs are located in general community clinics. The psychiatric management team in the Western Cape Province introduced an ACT programme for each of the three regional psychiatric hospitals, in an attempt both to reduce demand for inpatient beds and to alleviate pressures on community psychiatric services. Since the model of care provided by such teams in high-income countries would not be realistic or cost-effective in the South African setting, the international model was modified to allow for larger caseloads and consequently less frequent contacts. This enables a larger number of patients to benefit from the input at the cost of such input being probably less comprehensive.

Summary of core outcomes of ACT research conducted in the Western Cape

High frequency service users were randomised into an intervention ($n=34$) and a control ($n=26$) group. The control group received standard community care and the active group an assertive intervention based on a modified version of the international model of ACT. Study visits were conducted at baseline and 12 months, with demographic and illness information collected at visit 1 and readmission rates documented at study end. Symptomatology and functioning were measured at both visits using the PANSS and a number of other rating scales.

At the 12-month follow-up, subjects receiving the assertive intervention had significantly lower total PANSS as well as positive and general psychopathology

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subscales' scores. The mean number of psychiatric admissions was significantly lower in the intervention group.

The results indicated that assertive interventions in a developing setting, where standard community mental services are often under-resourced, can produce significant outcomes. Furthermore, these interventions need not be as expensive and comprehensive as international, first-world models in order to reduce inpatient days and improve psychopathology and overall levels of functioning in patients with severe mental illness.

Modified ACT intervention

Core features

Teams structure the way they work according to the needs of patients, staff and the resources of the area in which they are located. Teams need to be creative and flexible, especially in under-resourced settings, while adhering to the core principles of ACT. It is often more useful and realistic to facilitate and develop existing services rather than duplicating something that might already be in place but not functioning optimally.

Team composition

Most teams consist of a psychiatrist or a designated psychiatric medical officer, or both, a social worker and at least one chief psychiatric nurse. Though teams may not have a full-time occupational therapist and psychologist, it is very useful to have access to these services when necessary. Of critical importance is to build links with other resources, such as substance-intervention programmes and rehabilitation services, step-up facilities and vocational centres.

Team meetings

One of the core features of ACT is the close collaboration between team members and support given within the team. This necessitates frequent meetings during which all patients are discussed. Some patients may require longer discussion than others, about particular issues such as the specifics of the treatment plan and risk assessment. Frequent meetings also serve to boost team morale, providing valuable support to team members and facilitating the 'team approach' to clinical management.

Patient inclusion

Teams generally decide themselves whether patients should be included from inpatient or outpatient services. Generally speaking, it is easier to include patients just prior to discharge following admission, as it is easier to engage both patient and family under these circumstances. It is important that the nature of the service be explained in detail to the patient and the designated carer. It is often useful to discuss the treatment plan in some detail prior to discharge and make sure all parties are familiar with the implication of the service and the course of action in case of a crisis. Although some teams provide a 24-hour service, this is generally not cost effective and often unnecessary if an after-hour service is available.

Role of the key worker

The key worker may be any member of the multi-disciplinary team and functions as the primary care co-ordinator for that particular patient. The key worker is responsible for all aspects of the patient's treatment plan but may share certain aspects with another member of the team where necessary. The key worker may need to work across his or her own discipline in order to provide comprehensive input in all aspects of the patients' life. For example, a psychiatric nurse may need to apply for a disability grant for the patient and a social worker may need to provide more in-depth education about medication than they are used to. Key workers need to source all available resources as efficiently as possible in order to provide the most cost-effective service. Key workers try to identify factors that may have led to relapse or non-compliance in the past and try to be proactive in removing any obvious barriers to care. Patients often become non-adherent due to long waiting periods at local clinics, transport difficulties, forgetfulness or lack of motivation. These are all factors that can be addressed relatively easily within the context of an assertive service.

Nature of follow-up

The frequency and nature of the follow-up is tailored according to patients' needs. Initially, it may be necessary to see a patient frequently until he or she is adequately stabilised and familiar with the team. Generally, patients are seen at least every two weeks, which includes contact by all members of the team. In a typical early treatment plan, the key worker will perform a home visit one week after discharge, and again after two weeks, and the patient will see the medical practitioner at one month follow-up to collect medication and review the treatment plan. Eventually the key worker may see the patient every two weeks, alternating with the clinician for medication appointments. In many cases patients collect their medication from local clinics, in which case key workers may need to facilitate the process. This sometimes means requesting a more streamlined access for the vulnerable patient, checking that medication was issued correctly and reminding the patient of appointments in advance. Additional appointments may need to be scheduled with other members of the multi-disciplinary ACT team according to the patient's needs. At every contact, patients should be asked about troubling symptoms, side-effects and possible signs of relapse. Patients should be reassured that they are on the right track and motivated to continue with the treatment plan. Before concluding the visit key workers should confirm the next appointment and check that the patient still has sufficient medication and is taking it in the correct manner.

Assertiveness

Teams generally respond proactively to any reports of non-compliance or early relapse. This generally means a home visit by a key worker, but may result in an assessment by the team psychiatrist to revisit aspects of the treatment plan or assess if an admission is required. Missed appointments are followed up actively. In cases where patients are reported to be without medication, key workers may need to take medication to the patients' homes in order to avoid non-adherence. Some patients may become

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complacent and miss appointments, preferring that medication be brought to them. It can therefore become difficult to find the balance between assuring adherence and empowering patients to take responsibility for their illness. The reality is that this is an undertaking that takes longer for some patients than for others. Adherence must always be a primary focus, since the road to recovery depends on this.

Psychoeducation

A misperception prevails that psychoeducation may only be a once-off or occasional requirement. This should be an ongoing process of which the salient features should be reiterated at every available opportunity. Patients with schizophrenia find it exceptionally difficult to register new information and require repetition in order to achieve optimal learning. Both patients and family members are often overwhelmed in the early phases of the illness and may not be able to absorb the full extent of the information given to them. It is imperative that both parties be given ample opportunities to ask questions about all aspects of the illness. Key workers may identify particular areas that may need ongoing input, such as the need for medication or the cause of the illness. Patients are more likely to take medication regularly if they are informed and families may be more able to support patients if they are also well informed.

The therapeutic alliance

This term is often used loosely and with little explanation of the significant impact it may have on patient outcomes. A positive, strong therapeutic alliance is a powerful predictor of good outcome. Establishing this kind of alliance is nevertheless not always straightforward: many revolving door patients are not new to psychiatric services and may have a pre-established notion about mental health staff and a perception of coercive practices. In addition, many patients are not yet stable when included in the service. This makes optimal engagement more difficult, as one has to deal with psychotic symptoms, possibly poor insight and a high degree of suspiciousness. Engagement with the patient is therefore often a journey during which team members have to 'prove' their commitment to the patient, which might mean setting aside team goals while considering the patient's individual needs more closely.

The nature of the relationship is not the typical or traditional doctor–patient relationship, with the doctor formulating the most appropriate treatment and the patient simply being expected to comply. The alliance is rather built on mutual respect and understanding, requiring a collaborative discussion about the most appropriate options and how to implement these effectively. The challenge is often to allow differences of opinion and to avoid getting mired in potentially damaging discussions about diagnosis and exacerbating factors. The aim is rather to focus on mutual goals that can be achieved. For example, rather than trying to convince a patient that his or her diagnosis is that of schizophrenia and that he or she should be taking medication to control the symptoms, it may be more useful to observe that the medication appears to be useful in preventing these 'stress-induced episodes' that often require admission. Avoiding admission is a mutual goal and becomes an acceptable equivalent term for relapse.

Home visits

Home visits form a core part of any assertive intervention. There are numerous advantages in seeing the patient in his or her home environment. At the very least it gives the team an idea of the patient's day-to-day environment and the stressors associated with this. It may provide an opportunity to see interactions with family members which may not be evident during appointments at the clinic. Socially disorganised, chaotic home environments contribute significantly to patient morbidity, and the extent of this is often not evident until a home visit has been undertaken. It is important to remember that visiting a patient in his or her home environment is also a privilege and that one remains a guest in the house. A home visit provides a valuable opportunity to build on the therapeutic relationship as it may indicate the team's commitment to focus on the patient as an individual and to make an extra effort to build a sound and meaningful relationship. If a patient prefers not to allow access to the team or has decided to cancel the appointment, this needs to be accepted and the visit can be rescheduled. It is also important to adhere to general safety precautions. When a patient is unwell, agitated or unco-operative, care should be taken to avoid unnecessary risks. When patients are intoxicated, visits should rather be rescheduled.

Compliance or adherence management

The terms compliance and adherence may be used interchangeably. The degree of stigmatisation and implication of blame that may be associated with the term 'non-compliance' may have more to do with how the word is used than the word itself. Nevertheless, compliance tends to suggest a passive acceptance of treatment in the context of a paternalistic relationship rather than the more collaborative model described earlier. Non-compliance or non-adherence forms an integral focus of managing patients with chronic illness, whether psychiatric in nature or due to a general medical condition. It is an essential component of management that if ignored may impact directly on the patient's outcome. Along with life stressors and substance use, non-adherence is a frequent trigger of relapse in patients with mental illness. A multitude of interacting factors influence patients' compliance. The clinician needs to consider which of these factors are the responsibility of the treating practitioner, for example providing sufficient information, rather than automatically and unhelpfully blaming the patient for being unco-operative. These factors can be divided into three main groups, those related to the patient and his or her illness, the treatment, and the environment (see Box 49.1),

Box 49.1 Factors influencing patients' compliance

Patient- and illness-related factors:

- ☐ Past experiences
- ☐ Culture
- ☐ Family values
- ☐ Support network
- ☐ Personality

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- ☐ Intelligence
- ☐ Insight
- ☐ Prejudices
- ☐ Depression
- ☐ Cognitive impairment

Treatment-related factors:

- ☐ Therapeutic alliance
- ☐ Treatment setting
- ☐ Side-effects
- ☐ Complex regimes
- ☐ Polypharmacy
- ☐ Stigma
- ☐ Effectiveness

Environment-related factors:

- ☐ Costs of transport
- ☐ Long queues; waiting times
- ☐ Stigma associated with attending the clinic
- ☐ Unavailability of medication
- ☐ Inaccessibility of clinics

Understanding the patient's attitude towards his or her treatment is critically important in engaging the patient in an assertive service. Many patients have realistic fears and understandable complaints related to their medication; marginalising these concerns can do a great deal of damage to the therapeutic relationship. It is therefore extremely important to acknowledge the patient's distress and if necessary, one's own limitations when addressing concerns regarding both diagnosis and medication. Finding solutions often requires negotiation with the patient about what degree of side-effects can be tolerated and possibly considering alternatives. Research has indicated that revolving door patients often require more than one medication to remain well, and by the time they present to the service most have had trials of several different types of medication. This may complicate management further as options may be limited and patients may be less willing to consider medication that has already been tried with limited success.

The literature has indicated that injectable antipsychotics may be the most effective way to assure adherence and reduce relapse. In assertive services depot medication may be administered by key workers in the patient's home, provided the patient is co-operative. Counting of tablets to monitor compliance can easily be experienced by patients as an intrusive exercise that conveys mistrust in their ability to adhere with the treatment plan. It is helpful to emphasise the therapeutic role of the process and remain empathic and supportive while using the opportunity to educate the patient about the medication and illness. The focus of the intervention is not to 'check' but rather to empower the patient in order for him or her to take full responsibility for all aspects of the management of the illness in the longer term.

Substance abuse

Substance use is unfortunately inextricably linked to chronic mental illness. A number of factors make patients with chronic mental illness more susceptible to substance use. Some patients may be more vulnerable to the effects of peer pressure, while others may find that some substances alleviate negative symptoms and the side-effects of medication. Certain illicit substances form part of the social environment patients find themselves in on a daily basis, making abstinence all the more difficult. The treating team should strive to remain empathic and not adopt judgemental or punitive attitudes. The literature demonstrates that dual diagnosis patients benefit from assertive approaches, but that changes often only become evident over time. It is helpful to focus on harm-avoidance and address general patterns of use, rather than trying to reach a potentially unrealistic goal such as complete abstinence. Where resources are available, patients should be referred for substance rehabilitation or intervention.

Inclusion criteria

The initial focus of local teams was to attempt to reduce inpatient usage in revolving door patients, both to reduce costs of inpatient care and to alleviate pressure on inpatient services. This may have influenced the profile of patients included initially. Over time the inclusion criteria have become less rigid and allowed for teams to use clinical discretion when including patients. Patients with first-onset psychosis (FOP) are clearly a group that benefit a great deal from assertive input. More intensive follow-up, support and adherence management during the early phases of the illness may alter the long-term course of the illness in patients with FOP, and reduce the likelihood of patients developing revolving door patterns in the longer term.

Exclusion criteria and discharge policy

Few teams have explicit exclusion criteria or discharge policies. In most cases discharge policies are formulated by the team themselves and are based on logistical difficulties in following up patients or on clinical experiences over time. Modified ACT services such as those in developing countries may be more likely to discharge very unco-operative patients: it is difficult to justify providing extra time and energy on a patient who clearly does not benefit from the input provided. Similarly, patients who do not engage with the service over an extended period of time are more likely to be discharged.

Ideally, the aim for all patients would be to enable them in the management of their illness to integrate with mainstream services and remain well without assertive input. However, this may not be realistic in a service that focuses mainly on revolving door patients. The literature and clinical experience indicate that patients discharged from assertive interventions are very likely to relapse. However, some patients do remain stable over time and integrate well with existing community mental health services. Such patients may choose to be discharged or may be eventually discharged by the team while gradually reducing the degree of input.

Safety precautions

Safety is a concern in services where home visits are conducted. Any service that provides home visits has to contend with some degree of unpredictability in terms of the nature of the environment and the behaviour of patients. These risks may have less to do with the patient's mental state than with his or her environment. A misconception exists that it is dangerous to perform home visits for patients with mental illness. The reality is that more often than not the risk is constituted by factors that are associated more with the area in which the patient lives, substance use by other individuals in the home environment and the degree of criminal activity in the immediate neighbourhood.

Teams need to have a clear safety policy and key workers should have a low threshold for circumstances that may constitute a risk. As a general rule home visits should not be performed when access is refused by any member of the household or when there is evidence of intoxication with substances by any member of the household. This may seem excessive but substance intoxication poses a degree of unpredictability which is compounded by an unfamiliar environment. Key workers may do joint visits to minimise risk, but this affects the overall number of visits that can be performed in a specific time frame. In areas that are particularly unsafe or unpredictable, it may be helpful to contact local police to enquire about current risks.

No team member should be expected to do a home visit if they feel unsafe or threatened. In such cases, the visit should be postponed or if the risks persist the team should discuss other follow-up options.

Using other community resources

Available resources vary greatly from one area to another and it is often difficult to access services. Funding, transport difficulties and unrealistic inclusion criteria often contribute to difficulties in making use of existing services.

Substance rehabilitation

There are limited rehabilitation facilities that cater specifically for patients with dual diagnoses (substance-use disorders and mental illness). Patients with chronic, severe mental illnesses such as schizophrenia may find it difficult to benefit from mainstream programmes for a number of reasons, including illness factors, such as impaired concentration, impaired memory, poor motivation, poor self-confidence and the problem of stigmatisation. Substance interventions may be inpatient or outpatient based and are generally voluntary. If patients do not agree to voluntary rehabilitation, provision is made for involuntary treatment in terms of the Prevention of and Treatment for Substance Abuse Act (2008). This, however, is a laborious and time-consuming process and outcomes are disappointing. Changes in the pattern of substance use occur often and may only become evident over time, requiring patience and a flexible approach.

Psychosocial rehabilitation (PSR)

Patients who have recurrent relapses and readmissions often experience a deterioration of their self-confidence, skills of daily living and vocational skills. PSR focuses on strengthening and relearning these skills, building confidence and teaching patients to assert themselves, communicate effectively and manage conflict and anxiety in a healthy way. Daily living skills focus on particular tasks such as hygiene, managing finances, cooking and cleaning. PSR interventions should ideally start as part of pre-discharge planning, but due to inpatient bed pressures patients often have limited time to benefit from these interventions in an inpatient setting. PSR interventions in the community may be in the form of weekly groups or day programmes. Some areas may have access to step-down facilities that offer an inpatient PSR programme. These interventions form an important part of the non-pharmacological treatment component for patients with chronic illness and are a necessary requirement for the patient to remain well and achieve an optimal level of functioning.

Step-down facilities

These facilities provide a PSR-based programme in an inpatient residential setting. As mentioned previously, current bed pressures in acute inpatient units account for a rapid turnover in beds, resulting in patients often being discharged prematurely. These programmes provide the opportunity for patients who require extra time to recover fully. Interventions are tailored according to the patients' needs but the average length of stay is three to six months. These facilities also have the ability to 'step-up' known patients for short periods of time when there are early signs of relapse or stressors apply that may potentially trigger relapse. These short crisis admissions can prevent severe relapses and may therefore alleviate pressure on acute inpatient units.

Vocational rehabilitation

Many patients with chronic mental illness may have the ability to return to the open labour market provided they are given sufficient time and support. Vocational rehabilitation is specifically focused at enhancing vocational skills that may have been affected by the illness. This includes relearning previous skills, learning new skills and returning to the routine of a work environment. Some patients may move on to full gainful employment and others may be more comfortable with protected employment or a workshop where minimal remuneration is received. However, participating in vocational rehabilitation, whether in the short or longer term is invaluable in enhancing overall functioning as it provides purpose, builds self-confidence and maintains cognitive function.

Support groups

Patients and family members often express the desire to attend support groups. The availability of groups depends on the area. Families may feel alone, isolated and despairing in dealing with loved members who suffer from a mental illness and often

find support groups helpful. These groups provide a forum for carers to share their frustrations and experiences and to learn from one another.

Residential placement

For some patients it is not possible or beneficial to be housed with their family or extended family. In some cases the home environment may be too chaotic to provide the stability the patient requires to remain well; in others, family members may become overwhelmed and no longer feel able to adequately care for the patient. Some patients simply have nowhere to go. When residential placement is considered it is important to choose a facility that will suit the profile of the patient in terms of age, behaviour and the level of care required. Some may require 24-hour care, others may simply need someone to check in on them occasionally. There is a severe shortage of residential placement, making careful screening all the more important. Many areas do not have access to group homes, and those that do exist are often expensive, or inadequate. The abuse of vulnerable persons in squalid accommodation and through the appropriation of disability grants is not uncommon. The majority of patients are placed on waiting lists for long periods of time, and the stress of awaiting placement puts them at risk of relapse, resulting in further pressures on in-patient services.

Box 49.2	Benefits of assertive approaches
<ul style="list-style-type: none"><input type="checkbox"/> Reduced inpatient admissions<input type="checkbox"/> Reduced lengths of stay<input type="checkbox"/> Improved engagement with services<input type="checkbox"/> Early identification of relapse<input type="checkbox"/> Improved quality of life<input type="checkbox"/> Reduction in symptoms<input type="checkbox"/> Better support for family members<input type="checkbox"/> Overall improvement in treatment adherence	

Conclusion

International models for delivering community-based psychiatric care may not be financially viable in an under-resourced setting such as South Africa. Nevertheless, existing models can successfully be modified to provide a more cost-effective service that is available to more patients. Mental healthcare practitioners need to find innovative and locally appropriate and sustainable ways to engage patients as a means of enhancing adherence to negotiated treatment plans. Though a lack of resources makes comprehensive service delivery a challenge, this should not be used as an excuse not to deliver the best possible care.